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November 1, 2019

Ms. Steffany Powell Coker
Secretary to the Commission
Public Service Commission of Wisconsin
4822 Madison Yards Way
North Tower - 6th Floor
Madison, WI 53705-9100

Re: Application of Wisconsin Electric Power Company and Wisconsin Gas LLC for a Certificate of Authority under Wis. Stat. § 196.49 and Wis. Admin. Code § PSC 133.03 to Construct a System of New Liquefied Natural Gas Facilities and Associated Natural Gas Pipelines near Ixonia and Bluff Creek, Wisconsin – Docket No. 5-CG-106

Dear Ms. Powell Coker:

Pursuant to § 196.49, Wis. Stat., and Wis. Admin. Code Chap. PSC 133, Wisconsin Electric Power Company - Gas Operations and Wisconsin Gas LLC (together, "Utilities") hereby request a Certificate of Authority to install and place in service two new liquefied natural gas ("LNG") peaking facilities in southeastern Wisconsin near Ixonia and Bluff Creek.

The Need for Additional Natural Gas Deliverability and Supply Resources

Currently, the Utilities rely predominately on long-term capacity on interstate pipelines and firm contracted gas supplies to provide natural gas service to their customers in southeastern Wisconsin. Their forecasts anticipate increased demand for firm (uninterruptible) natural gas supply and distribution services in the near future and therefore need new infrastructure in order to increase firm deliverability of natural gas to their distribution systems and maintain reliable service to their customers, particularly during periods of peak natural gas demand (normally, the coldest days of the winter).

Challenges to Meeting the Utilities' Near-Term Needs

One alternative to meeting the Utilities' near-term gas deliverability and supply needs is to seek additional pipeline capacity and contracted supplies from the interstate gas market. However, the challenge facing the Utilities today is that the pipeline capacity serving southeastern Wisconsin, primarily on the Guardian and ANR pipeline systems, is fully subscribed for the foreseeable future. Thus, in order to procure additional deliverability and supply the Utilities would need to contract with one or more pipelines for new capacity to be constructed and agree to pay for the expansion(s) over a long term.

A Lower Cost Alternative for Customers- LNG Peaking Facilities

Because the Utilities' forecasted deliverability and supply needs are most critical at periods of peak demand, they can meet those needs at much lower cost than pipeline expansions by constructing new LNG storage facilities that will store natural gas in liquefied form and provide a ready supply of gas—in Wisconsin—on short notice. The Utilities estimate the cost savings to customers to be in excess of $200 million on a net present value basis under base case assumptions, and lower in cost in *all but one* (out of nearly 500) sensitivities studied.

The proposed LNG storage facilities will take gas delivered by the Utilities' existing pipeline capacity and cool the gas to -260º F to liquefy it and reduce its volume by 600% for storage. Each facility will have the capacity to store 1 billion cubic feet (BCF) of natural gas. When it is needed, the LNG will be heated to vaporize it for injection into the Utilities' distribution systems.

The facilities the Utilities seek to construct are analogous to combustion turbine "peaker" electric generation facilities that are relied up on by electric utilities in Wisconsin. Like CT peaking electric generation capacity, LNG peaking facilities are called upon during peak periods of usage. LNG peaking facilities are different than underground gas storage facilities, like WEC Energy Group's Bluewater facility in Michigan, which are used to store and supply large quantities of baseload supplies of gas that are used to serve customers throughout the winter months. Installing LNG peaking facilities will eliminate the need for the Utilities to contract for higher priced short-term supplies of gas during peak demand periods. They will also avoid the need to acquire additional firm pipeline capacity, which must be contracted for year round, to deliver supplies needed only a few days of the year.

Other Long-Term Benefits of LNG Peaking Facilities

In addition to the significant cost savings to customers, the proposed LNG peaking facilities have a number of attributes that make them the better strategic solution to the Utilities' forecasted deliverability and supply needs:

- *Utility control and PSCW oversight.* The Utilities will have direct control and the Commission will have direct oversight, of the facilities, which is not the case with interstate pipelines owned by third parties and regulated exclusively by the Federal Energy Regulatory Commission.

- *Physical hedge against volatile gas prices*. In addition to their primary reliability function, LNG peaking facilities will also provide the Utilities with a physical hedge against price volatility in the gas market because they can be used to quickly dispatch supply and reduce

the need to purchase gas during high price periods, which would reduce natural gas commodity costs to customers.

- *Expandable*. The proposed facilities will be designed in a manner that will allow expansion of their capacities and thus provide a physical price hedge against future interstate pipeline expansion costs.

- *Environmental attributes*. With smaller physical footprints, the construction and operation of LNG peaking facilities have less environmental impact than interstate pipeline expansions.

- *No regrets solution*. The proposed LNG peaking facilities represent a "no regrets" solution because even if the forecasted increase in firm gas demand does not occur, the Utilities would be able to reduce their reliance on higher priced interstate pipeline capacity over time, while still providing customers with the benefits identified above.

Proposed Cost and Ratemaking

The proposed LNG peaking facilities have a total estimated cost of $370 million exclusive of the Utilities' proposed return on Available Funds Used During Construction of 100% of their Construction Work in Process at their respective weighted average cost of capital. The Utilities will recover their investment in the facilities by including it in rate base and recovering the return on and of the investment in base rates.

The Utilities propose to recover their fixed labor and O&M costs in base rates and their variable O&M costs through their Purchased Gas Adjustment Clauses ("PGAC"). These variable O&M costs include the energy and material costs to vaporize LNG when the facilities are dispatched to serve peak demands and to liquefy gas to refill the storage facilities after they have been dispatched. Recovery of these costs through the Utilities' PGACs is reasonable and appropriate because these variable O&M costs are dependent on weather and market conditions beyond the Utilities' control and therefore cannot accurately be forecasted for inclusion in base rates.

Construction Schedule

Construction is planned to take place from November 2020 through November 2023. The Utilities respectfully request approval of this application no later than October 1, 2020, to allow sufficient time to receive the necessary DNR permits and approvals, to negotiate the necessary property transactions, to complete engineering, and to place initial material orders and complete construction so that the LNG facilities can be placed in service for the 2023/2024 winter heating season.

The attached application provides a detailed discussion of the need for the proposed LNG peaking facilities, the economic analysis of alternatives, and satisfies most of the application filing requirements for natural gas pipeline construction projects. While significant progress has been made to identify, evaluate and secure sites on which the LNG facilities will be constructed, the specific sites

have not been selected. At such time when the sites are selected and the necessary evaluations have been completed, we will supplement this application.

If you have any questions regarding this application, please do not hesitate to contact Rich Stasik at richard.stasik@wecenergygroup.com or (414) 221-3685.

Very truly yours,

Theodore T. Eidukas
Vice President, State Regulatory Affairs

Attachments

cc: Lindsay Tekler, Department of Natural Resources
Marilyn Weiss, Department of Agriculture, Trade and Consumer Protection

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LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
ADID	Advanced delineation and identification
AGRU	Acid Gas Removal Unit
ANR	ANR Pipeline Company
ASME	American Society of Mechanical Engineers
AT	Auxiliary transformer
Bcf	Billion cubic feet
BMP	Best Management Practices
BOG	Boil Off Gas
BOP	Balance of Plant
CA	Certificate of Authority
CO2	Carbon dioxide
CT	Combustion Turbines
CWA	Clean Water Act
DATCP	Department of Agriculture, Trade, and Consumer Protection
DCS	Digital Control System
Dth	Dekatherm
ESD	Emergency Shutdown
ER	Environmental Resources
ESA	Environmental Site Assessment
FAA	Federal Aviation Administration
FCC	Federal Communications

Abbreviation	Term/Phrase/Name
FM	Factory Mutual
FT	Firm Transportation
GAN	Gas nitrogen
GIS	Geographical information system
Guardian	Guardian Pipeline LLC
GSC	Gas Supply Consulting
HDD	Horizontal directional drill
HDMS	Hazard Detection and Mitigation System
HMI	Human-Machine Interface
HP	Horsepower
HV	High Voltage
I/O	Inputs/Outputs
ISA	International Society of Automation
LAN	Local Area Network
LDC	Local Distribution Companies
LFL	Lower Flammable Limit
LiDAR	Light Detection and Ranging
LIN	Liquid Nitrogen
LNG	Liquified Natural Gas
LOTO	Lockout/Tagout
MCC	Motor Control Center
MDQ	Maximum Daily Quantity

Abbreviation	Term/Phrase/Name
µg/Nm^3	Microgram per Newton-meter cubed
MMSCFD	Million standard cubic feet per day
NAAQS	National Ambient Air Quality Standards
NFPA	National Fire Protection Association
NGP	Natural Gas Pipeline Company
NNG	Northern Natural Gas
NPV	Net Present Value
NR	Natural Resources
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
PDC	Power Distribution Center
PEMB	Pre-engineered metal buildings
PGL	Peoples Gas Light and Coke Company
PLC	Programmable Logic Controller
PLSS	Public land survey system
ppmv	Parts per million by volume
Project	Three LNG facilities and associated pipelines
PSCW	Public Service Commission of Wisconsin
PVRR	Present Value Revenue Requirement
QMR	Quadruple Modular Redundant
ROFR	Right Of First Refusal
ROW	Right of Way

Abbreviation	Term/Phrase/Name
RTU	Remote Terminal Unit
SAMP	Special Area Management Plan
SIS	Safety Instrumented System
SO2	Sulfur Dioxide
SSURGO	Soil Survey Geographic Database
SST	Station service transformer
SWIS	Special wetland inventory studies
TCP/IP	Transmission Control Protocol/Internet Protocol
TMR	Triple Modular Redundant
UL	Underwriters Laboratories
UPS	Uninterrupted Power Supply
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish & Wildlife Service
usg	U.S. gallons
usgpm	U.S. gallons per minute
Utilities	WEC, WE Energies, Wisconsin Electric Power Company, Wisconsin Gas
VAC	Volts alternating current
WDNR	Wisconsin Department of Natural Resources
WEPCO	Wisconsin Electric Power Company
WEC	WEC Energy Group
WG	Wisconsin Gas
WisDOT	Wisconsin Department of Transportation

Abbreviation	Term/Phrase/Name
WRAM	Wetland Rapid Assessment Methodology
WWI	Wisconsin Wetland Inventory
Viking	Viking Pipeline Co.

1.0 PROJECT OVERVIEW

1.1 Introduction

Wisconsin Electric Power Company ("WEPCO") and Wisconsin Gas Company LLC ("WG") (together, "Utilities") submit this application to the Public Service Commission of Wisconsin (PSCW) for a Certificate of Authority (CA) under Wisconsin Statutes 196.49 and Wisconsin Administrative Code PSC 133.03 to construct a system of new Liquefied Natural Gas (LNG) facilities and associated natural gas pipelines near Ixonia and Bluff Creek, Wisconsin (the "Project").

The Project is needed to ensure that the Utilities can continue to serve their customers reliably and efficiently, especially during periods of peak demand. In order to meet their customers' demand for heating and process gas the Utilities rely predominantly on long-term firm capacity on interstate pipelines and firm contracted gas supplies. Each Utility forecasts increased demand for its firm (uninterruptible) natural gas supply and distribution services in the near term ( ), and therefore needs the capability of getting more natural gas delivered to its distribution system. The challenge today is that the capacity of the interstate pipelines serving Southeastern Wisconsin is fully subscribed for the foreseeable future.

the Utilities identified an approach that would enable them to meet their needs at much less cost to customers (an estimated savings of approximately $209 million NPV [1]) by constructing new LNG "peaking" facilities in Southeastern Wisconsin that will store natural gas in liquefied form and provide on short notice a ready supply of natural gas to the Utilities' distribution systems during peak demand periods, normally the coldest days of the winter. These facilities will take gas delivered via the Utilities' existing pipeline capacity and cool the gas to -260 ºF to liquefy it and reduce its volume by 600% for storage. When it is needed, the LNG will be heated to vaporize it for injection into the Utilities' distribution systems.

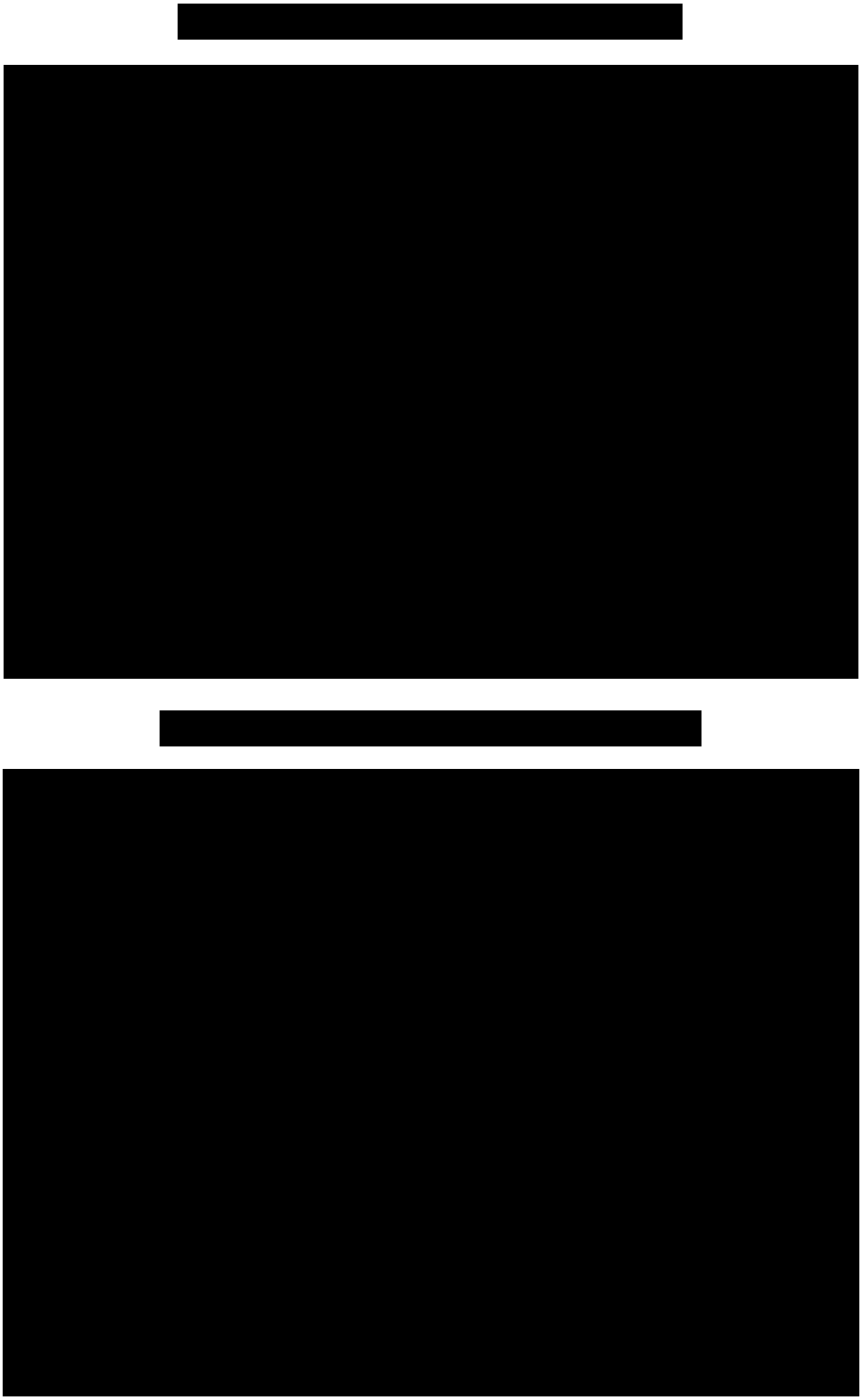
The facilities the Utilities seek to construct are analogous to combustion turbine "peaker" electric generation facilities. Like CT peakers, LNG peaking facilities are called upon during peak periods of usage to complement a utility's base and intermediate load resources. Although LNG peaking facilities

[1] Of this amount $91 Million will accure to WE-GO customers and $118 Million will accrue to WG customers.

store gas (in liquefied form), they are distinguishable from underground storage (e.g., WEC Energy Group's Bluewater facility in Michigan). LNG peaking facilities are designed to provide a short-term supply of gas for a limited number of days of peak demand, whereas underground storage provides the bulk of the Utilities' gas supply during the winter months. Because Wisconsin lacks the geology to store gas underground, the Utilities' underground storage resources are located elsewhere, dependent on interstate pipelines for delivery of gas to and from the facilities.

The LNG peaking facilities would cost-effectively diversify and add reliability and resiliency to the Utilities' existing portfolios of interstate pipeline capacity, firm gas supply contracts, and contracted underground storage. To supply gas during peak periods today, the Utilities must rely on short-term supplies in the market and interstate pipeline capacity to deliver such supplies. The proposed alternative—owning LNG peaking facilities in Wisconsin—will provide the Utilities with short-term gas supplies that are already delivered and connected to the Utilities' distribution system, without the need to hold additional amounts of firm pipeline capacity year round.

Figures 1-1 and 1-2 depict how the proposed LNG peaking facilities will fit into the Utilities' resource portfolios [redacted] to meet their forecasted needs. As these figures show, the proposed LNG peaking facilities will allow the Utilities to serve their peak demands without the need for additional swing supplies and the interstate pipeline capacity needed to deliver it.



The LNG peaking facilities will provide the Utilities' customers significant value [redacted] The economic analysis performed included sensitivities on key assumptions to test and confirm the overall savings with new LNG facilities. Figure 1-3 shows the results of the sensitivity analysis and the combined savings the proposed LNG facilities provide the Utilities [redacted] As shown, all of the sensitivities evaluated resulted in combined savings with the Project and 90 percent probability the NPV savings will be between $90 and $335 million.

Figure 1-3: Sensitivity Analysis NPV Savings

In addition to significant cost savings to customers, the proposed LNG peaking facilities have a number of attributes that make them the best strategic solution to the Utilities' forecasted deliverability needs:

- Utility control and PSCW oversight. The Utilities will have direct control and the Commission will have direct oversight, of the facilities, which is not the case with [redacted].

[2] For WG, the Project was lower in cost [redacted] in all sensitivity cases analyzed. For WE-GO, the Project was lower in cost [redacted] in all sensitivity cases except where the worst-case assumptions for the Project were combined with the best-case assumptions for the pipeline alternatives.

- Physical hedge against volatile gas prices. In addition to their primary reliability function, LNG peaking facilities will also provide the Utilities with a physical hedge against price volatility in the gas market because they can be used to quickly dispatch supply and reduce the need to purchase gas during high price periods.

- [redacted] Expandable. The proposed facilities will be designed in a manner that will allow expansion of their capacities and thus provide a physical price hedge [redacted]

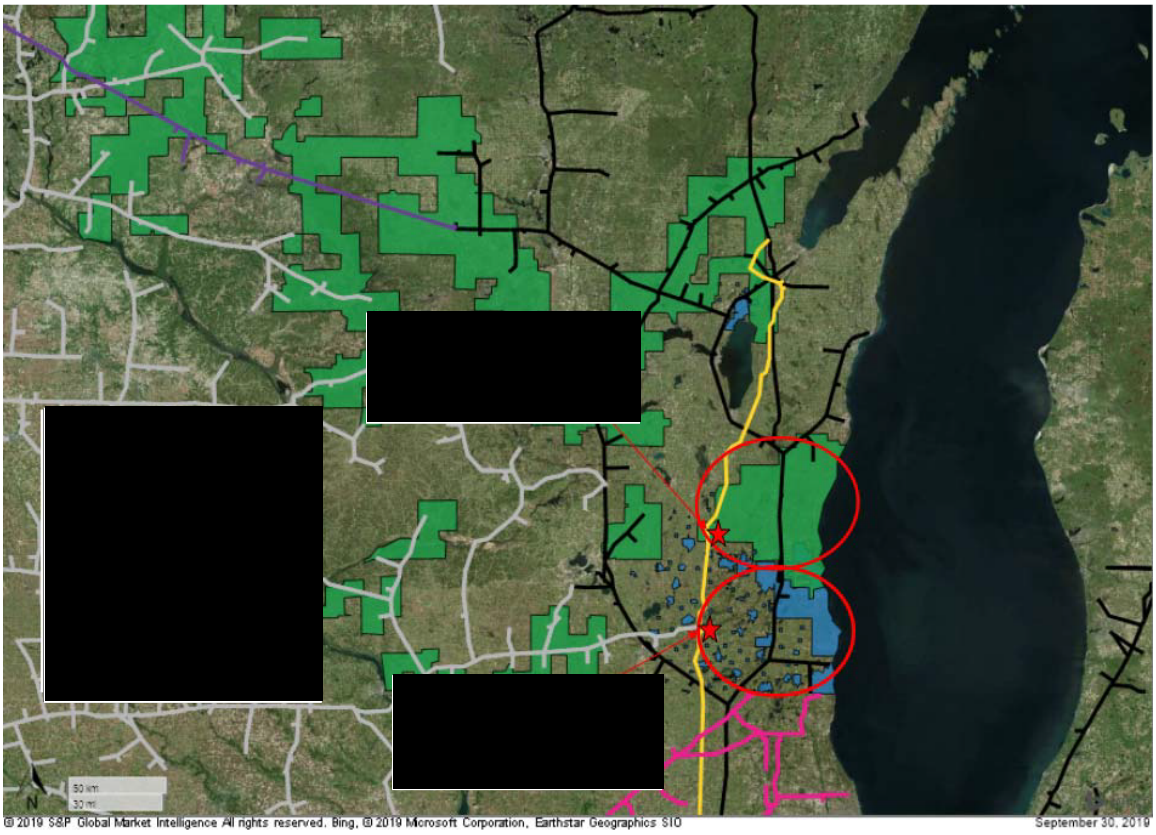
- Environmental attributes. With smaller physical footprints, the construction and operation of LNG peaking facilities have less environmental impact [redacted].

- No regrets solution. The proposed LNG peaking facilities represent a "no regrets" solution because even if the forecasted increase in firm gas demand does not occur, the Utilities would be able to reduce their reliance on higher priced interstate pipeline capacity over time.

1.2 Project Description

The proposed LNG facilities will be located near each utility's distribution system in areas of concentrated firm customer demand. The LNG facility near Bluff Creek, east of Whitewater, will serve customers in WE's southeast Wisconsin service area delivering firm LNG supply by way of both the Bluff Creek lateral and the proposed Lakeshore Lateral. The LNG facility near Ixonia will serve customers in WG's greater Milwaukee service area by way of the Ixonia lateral. Figure 1-4 below shows the concentrated demand areas the Project's facilities will serve.

Figure 1-4: Demand Areas near Project Sites



1.2.1 Project Owner/Operator

The Project will be owned and operated as follows:

- Bluff Creek LNG Site –WE-GO
- Ixonia LNG Site –WG

Additional information is provided in Chapter 2 (Project Need Analysis).

1.2.2 Municipalities and Counties Potentially Impacted

Although final sites are still being selected, the Project is anticipated to potentially impact the following counties and townships:

- The Bluff Creek LNG Site will be sited in Walworth County. The potential neighboring communities are LaGrange, Sugar Creek, and Whitewater.
- The Ixonia LNG Site will be sited in Jefferson County. The potential neighboring communities are Ixonia, and Watertown.

1.2.3 Project Details

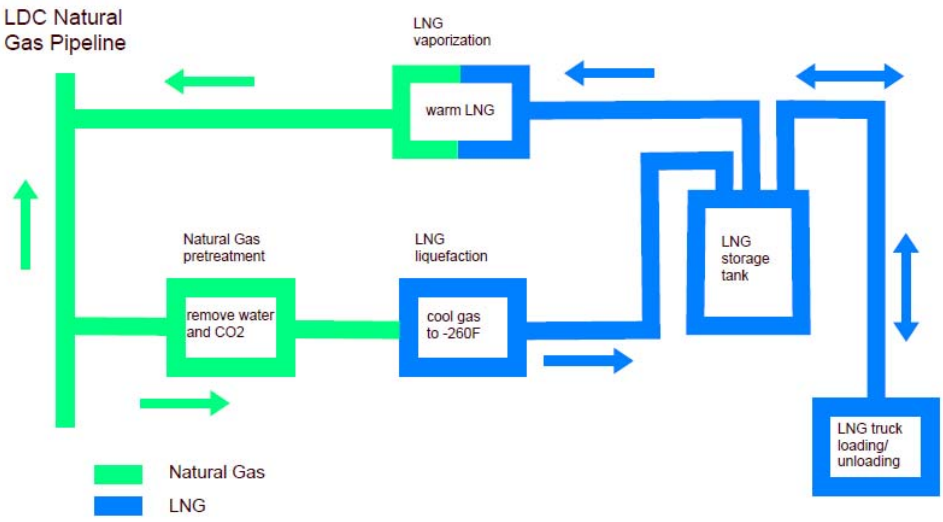
The Project includes new LNG peaking facilities at two sites and associated pipelines and supporting equipment. This application for a Certificate of Authority seeks authorization to construct both sites as well as the associated pipelines and supporting equipment. Both the Bluff Creek and Ixonia LNG facility sites will be capable of liquefying, storing and vaporizing natural gas for peaking service.

1.2.3.1 Bluff Creek & Ixonia Sites

The Bluff Creek and Ixonia sites will include natural gas pretreatment and liquefaction equipment, LNG storage tanks, vaporization equipment and truck loading/unloading equipment. A preliminary general arrangement plan is included within **Appendix A of Volume II (Ixonia) and Volume III (Bluff Creek).** Infrastructure, equipment, piping, tanks, pumps, and materials will be supplied and installed new.

Liquefaction, storage, vaporization and truck loading/unloading that will occur at the Bluff Creek and Ixonia Projects sites is illustrated in Figure 1-1.

Figure 1-1: LNG Liquefaction,Storage, and Vaporization at Bluff Creek and Ixonia Sites



1.2.3.2 Storage and Vaporization Equipment at Each Site

The vaporization system will either be indirect water bath type or a shell and tube type vaporizers. In either case, water will serve as the heat transfer medium to vaporize the LNG.

LNG storage tanks will have a secondary containment impoundment. The impoundment will be capable of holding 110% of the volume of the tank. The tanks sizes are further discussed in Section 3. The

Balance of Plant (BOP) systems and equipment will be designed to meet specific performance guarantees necessary for the Project to achieve its stated objectives and realize the identified benefits.

Safety will be paramount. Fire protection equipment will comply with the recommendations of site specific fire protection evaluations performed for each site.

The control system will consist of a central DCS at each facility with remote access. There will also be a Safety Instrumented System (SIS) to provide safe shutdown of the facility and isolation for various segments of process piping and equipment. In addition; fixed, local emergency shutdown system (ESD) push-buttons will be located at strategic locations throughout the facilities to safely shutdown corresponding portions of the plant.

Gas distribution facilities will connect the new facilities to the existing pipelines.

Each facility will require electric power. Based on the final site selections, required electrical distribution facilities will be installed.

Potable water and fire water will be supplied by municipal water sources or groundwater wells at each site.

1.2.4 Proposed Project Construction

The Bluff Creek and Ixonia sites will be greenfield sites within agricultural areas.

1.2.5 Project Connection Points

Pipeline connection points as well as the proposed pipeline route will be identified during the site selection process.

1.2.6 Project Life Span

The design life of the plant located at each Project site is 30 years.

1.3 Site Selection Process

The Utilities have begun to reach out to the local community for suggestions and feedback on potential sites for the proposed LNG facilities in the counties identified in **Volume I Appendix A**. After dialogue with local communities, the Utilities plan to identify potential sites and landowners who are willing to sell land for the Project. The potential sites will be evaluated based upon their remoteness from residential and commercial areas, environmental considerations, and proximity to the associated natural gas pipe laterals. The finalized Siting Study will be provided as **Volume I Appendix B** in a supplemental filing.

Members of the Project team will conduct field reconnaissance of the potential sites. The field team will address the following:

- Confirming environmental information regarding proximity to wetlands, floodplains, and topographic features;
- Assessing the site from constructability, access to transportation, and visibility standpoint;
- Confirming existing and surrounding land uses and assessing potential impacts on land uses;
- Identifying proximity to existing developments and sensitivity to noise;
- Confirming potential water supply and wastewater discharge sites;
- Assessing the likelihood of environmental impacts in the areas of historic structures, habitat suitable for threatened or endangered species, and water discharge; and,
- Reviewing potential interconnection routing corridors or zones for natural gas distribution, water infrastructure, and other required utility interconnections.

Results of the siting study will be a preferred site for each of the two LNG Sites.

1.4 Permits and Approvals

The following sections provide information on federal, state, and local correspondence; anticipated permits and approvals required for the Project; and federal, state, or local government issues or concerns.

1.4.1 Federal, State, and Local Government Correspondence

Once final LNG Sites and alternate pipeline routes are selected, the Utilities will implement a communication plan to inform the public about the Project and to solicit feedback from stakeholders. The Utilities plan to conduct public open houses and to send invitations to landowners, local, state, and federal stakeholders. A summary of these public open houses and other public communications will be provided in a supplemental filing in **Volume I Appendix C**. A summary of agency correspondence will be provided in **Volume I Appendix D**. These Appendixes will be updated contemporaneously during the proceeding associated with docket.

The Utilities have also had correspondence with the Department of Agriculture Trade and Consumer Protection ("DATCP") and received approval to hold preliminary discussions with landowners to determine if a landowner may be interested in selling their property to allow for preliminary evaluation of the property (e.g., surveying, etc.). This also included obtaining DATCP approvals to secure options to purchase the land from landowners prior to final approval of this application.

1.4.2 Project Permits and Approvals

Tables 1-2, 1-3, and 1-4 provide anticipated federal, state, and local permits/approvals for the Project. Additional approvals may be identified after more detailed siting and design is complete.

Table 1-1: Federal Permits and Approvals

Agency	Planned Activity	Type of Approval
USFWS	Various land disturbance construction activities	Endangered Species Act and National Bald Eagle Management Guidelines
USACE	Discharge of dredged or fill material into waters of the U.S.	Clean Water Act (CWA) - Section 404 Permit. Including NWP and St. Paul District Utility RGP

Table 1-2: State Permits and Approvals

Agency	Planned Activity	Type of Approval
PSCW	Building and operating the LNG Sites and natural gas lines	Certificate of Authority (CA)
WDNR	Air permitting for facilities	Air Construction Permit (Chapter NR 406)
	Air permitting for facilities	Air Operating Permit (Chapter NR 407)
	Erosion control and stormwater management for land disturbance during construction	Construction site stormwater discharge permit (Wis. Admin. Code NR 216)
	Operational stormwater pollution prevention plan	Industrial stormwater discharge permit (Wis. Admin. Code NR 216).
	General Permit for Utility Temporary and Permanent Wetland Impacts (WDNR-GP3-2018)	
	Various land disturbance construction activities	Potential impact to federal and state threatened and endangered species.
	Placement of structure within a waterway; placing [temporary] bridges over navigable waterway	Wis. Stat. Chapter 30 (Navigable Waters, Harbors and Navigation) Permit: Wis. Stat. §§ 30.12 and 30.123 and Wis. Admin. Code NR 320
	Required for issuance of USACE Section 404/10 permits unless waived by WDNR	Section 401 Water Quality Certification (Application for Wetland Water Quality Certification, Form 3500-53N)

Agency	Planned Activity	Type of Approval
	Invasive Species management for land disturbance during construction	Chapter NR 40 Invasive Species Identification, Classification and Control (Ch. NR 40, Wis. Adm. Code)
Wisconsin Department of Safety And Professional Services	Construction of all buildings and structures	Approval of plans and specifications (Wis. Stat. § 101.02)
WisDOT	Delivery of equipment to the construction site	Oversized Equipment Delivery Permit
Wisconsin Historical Society	Site preparation and grading	Approval of archaeological surveys (Wis. Stat. § 44.40) and Section 106 Cultural Resources Clearance
Wisconsin Department of Agriculture, Trade and Consumer Protection	Storage of flammable or hazardous material in an above ground tank	Registration

Table 1-3: Anticipated Local Permits and Approvals

Agency	Planned Activity	Type of Approval
Jefferson County	Construction	Conditional Use Permit
Walworth County	Construction	Conditional Use Permit
County and Local Municipality	Construction	Conditional Use Permit

1.4.3 Federal, State, and Local Government Issues/Concerns

The Utilities have informed the local governmental entities – the Towns of Watertown, Ixonia and LaGrange of the Project and to date none have identified significant issues or concerns with the Project.

1.5 General Construction Schedule

The construction schedule for each site is provided in Table 1-4.

Table 1-4: General Construction Schedule

Task	Bluff Creek		Ixonia	
	[redacted]	[redacted]	[redacted]	[redacted]
CA Filing	[redacted]	[redacted]	[redacted]	[redacted]
Engineering	[redacted]	[redacted]	[redacted]	[redacted]
Site Preparation	[redacted]	[redacted]	[redacted]	[redacted]
Tank Construction	[redacted]	[redacted]	[redacted]	[redacted]
Balance of Plant Construction	[redacted]	[redacted]	[redacted]	[redacted]
Mechanical Completion	[redacted]	[redacted]	[redacted]	[redacted]
Substantial Completion	[redacted]	[redacted]	[redacted]	[redacted]
Tank Fill Period	[redacted]	[redacted]	[redacted]	[redacted]
Commercial Operation	[redacted]	[redacted]	[redacted]	[redacted]

1.5.1 Major Construction Activities

The following construction activity descriptions are generally applicable to each Site. Where activities are not applicable to a particular site, that difference is identified.

1.5.1.1 Soil and Site Preparation

The first step of construction will involve marking the boundaries of wetlands and other environmentally sensitive areas that must be avoided during construction. Each site will then be cleared of vegetation, rough graded, and compacted, as necessary, to create level surfaces for the movement of construction equipment to prepare the site for construction.

Construction will start with initial soil and site preparation including the following activities:

- Marking wetland boundaries;

- Mobilizing labor and construction resources;
- Completing additional site surveys, as necessary;
- Installing stormwater management features;
- Clearing and grubbing vegetation where necessary to prepare the site for construction;
- Grading site construction access, roadways, and site features;
- Constructing pipe systems, drainage ditches, and culverts to convey stormwater;
- Installing temporary construction and laydown areas; and,
- Applying first layer of surfacing to facility roads (as soon as practical).

Site grading and berms will be designed to use the cut fill material on site as much as practicable.

1.5.1.2 Foundations

LNG storage tank foundation installation will consist of an elevated mat foundation.

Other equipment and structures on site, such as the liquefaction equipment, compressors, fire protection equipment, utility racks, metal buildings will be lightly to moderately loaded and are expected to be soil or pile supported foundations.

1.5.1.3 Roads

Permanent road routes will be used as much as possible during construction and will be supplemented by temporary roads for access to construction parking, laydown yards, and work areas.

Construction Roads:

- Roads, parking areas, and lay down areas will be paved with compacted gravel, crushed stone, or an asphalt base course.
- Permanent roads will be paved or compacted gravel.
- Paved areas will slope to drainage ditches sized to carry expected runoff.

1.5.1.4 LNG Secondary Containment

Secondary containment for LNG Storage Tanks will be an impoundment located adjacent to each storage tank area as shown in the general arrangement plans **(Appendix A of Volumes II and III)**. The impoundment will be fully functional before LNG is placed in the tank.

Process areas containing vessels and piping system with LNG and refrigerant will be curbed and graded so that any LNG and refrigerantspills will be contained within designated containment areas. A Spill

Prevention, Control and Countermeasures (SPCC) plan will be created for the Project. A copy of the SPCC plan will be included in a supplemental filing in **Appendix B of Volumes II and III**.

1.5.1.5 LNG tank construction

LNG storage tank construction will take approximately 18 months to complete. The construction sequence for the tanks is expected to proceed as follows:

- Install outer tank floor plate and annular shell
- Install roof and suspended deck
- Install floor insulation and leveling course
- Install inner tank floor plate and annular shell
- Install piping and tank shell closure pieces
- Hydrotest/pressure test tank
- Install final insulation
- Nitrogen purge tank

1.5.1.6 Process Equipment Construction

The process equipment construction duration will be shorter than construction of the LNG storage tank. The construction process will include erecting the Compressor and Vaporizer enclosures:

- Compressor enclosures will store the refrigerant and boil off gas compressor equipment.
- Vaporizer enclosures will be used to store the LNG vaporizer.

Construction of process equipment will occur as construction of the equipment enclosures is underway. During construction of the enclosures the Utilities will set the following equipment:

- Truck unloading equipment
- Truck scales
- Cold Box
- Pretreatment equipment
- Refrigerant tanks
- Instrument air equipment
- Emergency generator
- Utility racks
- Fire/Service Water Tank
- Fire Suppression Equipment

1.5.1.7 Electrical and Control System Construction

The electrical equipment room and DCS/SIS equipment room will be within a common enclosure. The DCS/SIS room will include the local operator workstations for controlling and monitoring the facility.

1.5.1.8 Gas Line Lateral Construction

Pipeline construction will be within the pipeline right-of-way. Where possible, new pipelines will follow existing pipeline routes to limit the need for clearing and grubbing on new areas. Pipeline construction activities will include:

- Additional site surveys, as necessary;
- Marking wetland boundaries;
- Installing stormwater management features;
- Clearing and grubbing vegetation where necessary to prepare the site for construction;
- Trenching and installing pipe;
- Hydrotesting;
- Backfilling excavation; and,
- Restoring the ROW

1.5.2 Seasonal and Regulatory Construction Constraints

After Project sites and pipeline routes are identified, an environmental reviewer will complete an Environmental Resources (ER) Review which will indicate protected plant and animal species near the sites and alternative pipeline routes. WDNR will provide guidelines for construction in areas near protected species, including seasonal avoidance periods.

1.6 Project Maps

1.6.1 Project-Specific Data

Project specific design conditions will be included in a supplemental filing in **Appendix C of Volumes II and III**. The appendix includes site specific environmental conditions applicable to the design of the facility.

1.6.2 Environmental Data

The following appendices provide maps showing environmental data, such as the waterways, wetlands, soils, rare species, topography, and floodplains. Once final, alternatives and pipeline routes are selected,

more detailed maps of each site and route will be produced and submitted in a supplemental filing for each environmental map:

- Overview Map of Project Counties: **Volume I Appendix A**
- Rivers, Lakes, and Other Waterways**: Appendix D of Volumes II and III**
- Outstanding or Exceptional Waterways, Trout Streams, Wild or Scenic Rivers: **Appendix E of Volumes II and III**
- Wetland Maps: **Appendix F of Volumes II and III**
- Soils and Hydric Soils Map: site-specific soils maps will be provided in a supplemental filing in **Appendix G of Volumes II and III**
- USGS Topographic Maps: a general topographic map for each Project county is provided in **Appendix H of Volumes II and III**
- Floodplain Maps: **Appendix I of Volumes II and III.**

Environmental data used in Project design will be included in **Appendix C of Volumes II and III** as described above in a supplemental filing. Environmental data critical to the plant design include wind speeds, humidity, and temperature information that is used in calculating thermal exclusion zones and gas dispersion zones as defined by the Wisconsin Administrative Code and NFPA 59A. **.**

1.6.3 Parcel Data

After sites and pipeline routes are identified, recent parcel data will be obtained from local municipalities and/or counties, as appropriate. This data will be used to provide maps of privately owned parcels; public properties; tribal or other types of properties; political subdivision boundaries; and townships, ranges, and sections near each proposed Project Site and pipeline route. These maps will be provided in a supplemental filing in **Appendix J of Volumes II and III.**

1.6.4 Land Use

An existing landcover map for each Project county is provided in **Appendix K of Volumes II and III.** After Project Sites and pipeline routes are identified, site-specific landcover maps will be provided in a supplemental filing. A detailed zoning map will be created for each Project site and pipeline route and will be provided in a supplemental filing in **Appendix L of Volumes II and III**. Also, recreation areas and trails near each site will be identified, mapped, and submitted in a supplemental filing in **Appendix M of Volumes II and III**.

1.6.5 Utility/Infrastructure Data

Appendix N of Volumes II and III contains a map of roads, highways, interstates, and railroads in each site's county. An existing utility/infrastructure map for each Project county is provided in **Appendix O of Volumes II and III.** After Project sites and pipeline routes are identified, existing infrastructure and applicable infrastructure ROW near each Project site and pipeline route will be mapped.

1.6.6 DNR Required Information

WDNR required information will be included on Project maps when sites and pipeline routes have been identified and those maps have been provided in a subsequent supplemental filing.

1.7 Mailing Lists

After sites and pipeline routes are identified, recent parcel data will be obtained from local municipalities and/or counties, as appropriate. This data will be used to create mailing lists containing landowners within 1 mile of each Project Site and/or pipeline route. These lists will be submitted separately to the docket coordinator in a supplemental filing.

1.8 ESRI ArcGIS Data Files

ESRI ArcGIS Version 10.6 was used to create all maps for this application. After sites and pipeline routes are identified, WEC will conduct additional field and desktop analysis of potential impacts of the Project. This information will be summarized in a spreadsheet listing each GIS file, a description of the data, the data source, and date the data was generated or collected in the field. All GIS files will be provided as well. This information will be included in **Volume I Appendix E** in a supplemental filing.

2.0 PROJECT NEED ANALYSIS

2.1 Introduction

As part of their ongoing portfolio assessment, the Utilities continue to focus on developing firm capacity and supply alternatives to support the rising demand for natural gas among all customer sectors in a very challenging environment in Wisconsin where there is no underground storage and interstate pipeline capacity is fully subscribed. Like other gas utilities around the country with constrained storage and/or transport capacity, the Utilities have sought ways of getting lower cost firm gas deliverability into Wisconsin while improving system reliability and resiliency. To meet increasing demand, the Utilities will need incremental firm deliverability, capacity and supply in the near future. In their evaluation of alternatives to meet that demand, the Utilities have determined that the proposed LNG peaking facilities will provide the superior, long-term solution needed when compared to available alternatives [redacted]

2.2 Purpose and Necessity

The Utilities conducted a comprehensive risk assessment of their gas supply portfolios and an evaluation of long-term natural gas demand growth in Wisconsin in an effort to optimize their gas portfolio and meet future growth needs. Based on conservative assumptions about increased firm demand for gas in their service territories in the next three to four years, the Utilities have identified the need for new infrastructure in order to increase firm deliverability of natural gas to their distribution systems and maintain reliable service to their customers, particularly during peak natural gas demand periods. As the result of their evaluation, the Utilities have concluded that the proposed LNG peaking facilities are the best means of serving long-term gas demand and supply requirements, meeting short-duration winter peaks more efficiently and economically and positioning the gas supply portfolio to both manage risk and optimize ratepayer benefits in the short and long term. The benefits of this approach are described in detail below.

2.2.1 Forecasted Demand and Capacity

The Utilities' firm demand forecast is based on the first three years of their approved 2019-2022 Gas Supply Plans[3]. Following that period, the Utilities conservatively estimate that their firm demand will grow at [redacted], which reflects native growth plus incremental load additions from larger

[3] Gas Supply Plans: WE Docket 6630-GP-2019; WG Docket 6650-GP-2019.

customers that have requested service.[4] In addition to this base forecast, the Utilities modeled a low demand [redacted] and a high demand [redacted].

In recent years it has become apparent that incremental firm capacity on interstate pipelines serving Wisconsin will not be available for the foreseeable future. This is challenging for any gas utility [redacted] The Utilities' assessment of firm pipeline capacity availability is provided in **Volume I Appendix F, Attachment 1**.

Interstate Pipeline Serving Wisconsin

ANR Pipeline Company (ANR) and Guardian Pipeline LLC ("Guardian") collectively supply the vast majority of the Utilities' pipeline capacity in eastern Wisconsin. The service areas that Guardian serves can also be served by ANR. The Utilities are also served by Natural Gas Pipeline Company (NGPL), Northern Natural Gas (NNG) and Viking Pipeline Co. (Viking). [redacted]

ANR Capacity: The Utilities collectively hold [redacted] ANR capacity for peak day coverage. [redacted]

Guardian Capacity: The Utilities, along with Wisconsin Public Service Corporation ("WPSC"), hold [redacted]

[redacted]

[redacted]

The combination of firm demand growth and [redacted] into Wisconsin has caused increased demand [redacted] This increased demand has resulted in a significant increase in third party shipper contracts [redacted]. As a result, and as detailed in **Volume I Appendix F, Attachment 1**, it is evident [redacted]

The Utilities' Load and Capacity Forecasts

The Utilities must plan to serve their forecasted customer demand plus a [redacted] reserve margin and secure additional capacity to account for potential disruptions on third party pipelines [redacted]

The Utilities' 10-year load (demand) and capacity tables, as detailed in **Volume I Appendix F, Attachment 2**, provides the following:

1. A detailed description of the forecasted demand;

[redacted]

3. The net firm capacity to firm demand position (i.e. shortfall or surplus).

These load and capacity tables collectively show that the Project is needed to meet anticipated capacity and supply needs. The following conclusions regarding the need for new natural gas deliverability can be drawn for each Utility:

WE-GO

- WE has a total need for approximately [redacted] of new natural gas deliverability to its distribution system.

In the base forecast, firm system sales demand is expected to grow by

- With the projected firm capacity resources secured on Guardian, WE-GO is projected to have a of .
- The average under base conditions between is projected to be approximately .
- Under the low and high demand forecasts the average during the same timeframe could range between – in any scenario there is a projected .

WG

- WG has a total need for approximately of new natural gas deliverability to its distribution system.

Under the base forecast, firm system sales demand is expected to grow by

With the projected firm capacity resources secured on Guardian, WG is projected to have a fall of

- The average between is projected to be approximately .
- Under the low and high demand forecasts the average during the same timeframe could range between – in any scenario there is a projected .

Total (WE-GO and WG Combined)

- The combined new deliverability need for the Utilities is approximately [redacted].

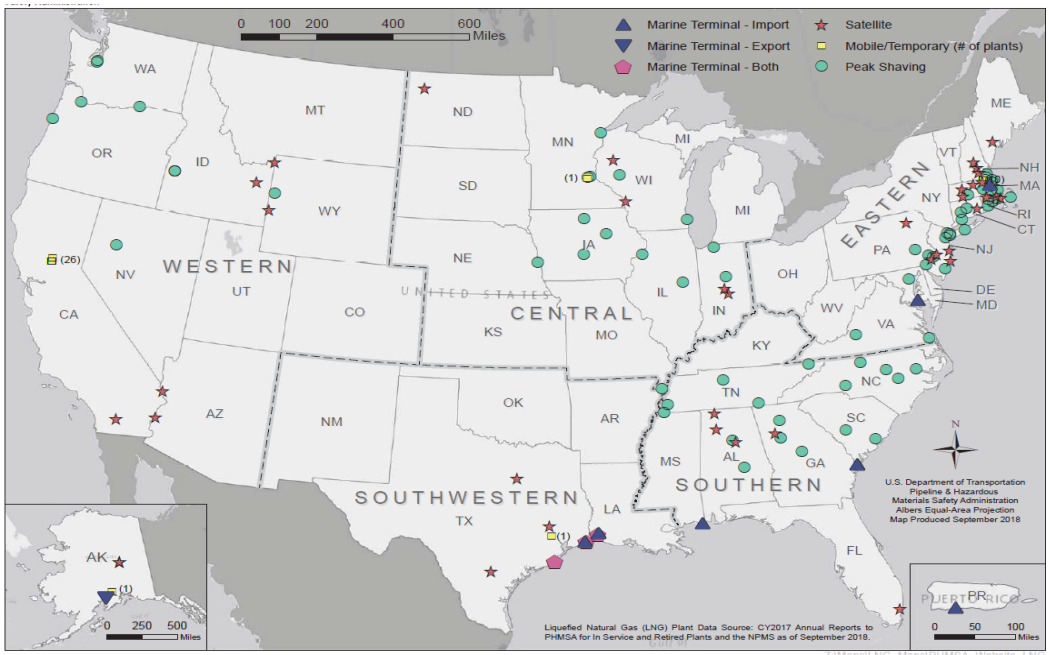
2.2.2 Strategic Fit

[redacted] the Utilities evaluated the feasibility and cost effectiveness of constructing LNG peaking facilities. The use of such facilities for meeting natural gas demand is not uncommon and is used throughout the U.S. Currently, there are more than 100 peaking plants in the U.S. consisting of both LNG and propane air facilities, three of which are owned and operated by the Utilities.[6] Fifty percent of the LNG facilities are located in the northeast portion of the U.S. where gas pipeline capacity is limited and/or constrained. Most of the LNG facilities are owned by gas transmission companies and local distribution companies ("LDCs").

The Utilities' proposed LNG facilities mirror what a number of gas LDCs have built across the country as a cost-effective option to meet peak day loads. Besides the Marine terminals for imports and exports and a small percentage owned by interstate pipelines as a storage service for shippers, the majority of LNG plants in-service are used for peak shaving and owned by the local natural gas utility for use on their respective distribution system. Peaking facilities are typically located on or in close proximity to large distribution nodes where there is sufficient downstream demand and accompanying gas flow. Figure 2-1 below shows the LNG plants in the U.S. that are connected to natural gas pipeline systems.

[6] The LNG facilities include WEPCO's Oak Creek facility, WG's Rice Lake satellite facility and PGL's Manlove facility.

Figure 2-1: National LNG Plants



Source: U.S. Department of Transportation

The proposed LNG peaking facilities will provide the same types of services and benefits that other LNG peaking facilities provide in other parts of the country. They would complement the approximately 2.3 Bcf of existing peaking capacity owned and operated by WEC utilities. Collectively, WEC has significant experience in operating and maintaining LNG facilities for peak shaving.

While the proposed facilities will store gas (in liquefied form), it is important to understand the difference between an LNG peaking plant and underground storage, such as WEC's Bluewater storage facility. Underground storage facilities provide baseload natural supplies throughout the winter months, typically from November through March (150 days). The Utilities must procure firm transportation capacity on an interstate pipeline to move gas from storage fields outside of Wisconsin to the utility because Wisconsin does not have the geology for the underground storage of natural gas. By contrast, LNG peaking facilities like those proposed provide supply during short periods of exceptionally high demand, typically less than ten (10) days during the winter. They also serve as a physical price hedge against the short periods of high natural gas prices that can occur at time of the year.

The use of LNG facilities to supply gas during peak demand periods is analogous to how electric utilities use CTs as economic sources of capacity and supply during peak demand periods. As such, LNG peaking facilities provide similar reliability and economic benefits. Because LNG peaking facilities are connected directly into the Utilities' gas distribution system, there is no need for additional firm transportation on an interstate pipeline. In fact, LNG facilities will make more efficient use of existing

firm pipeline capacity that the Company already holds. For example, a significant portion of the Utilities' firm pipeline capacity is an annual service. This means the Utilities hold the same amount of capacity in the summer as they hold in the winter even though demand in the summer is significantly less. As a result, much of the summer capacity that isn't used for injecting into underground storage is underutilized. By having LNG on their distribution systems, the Utilities can use the existing firm pipeline capacity during liquefaction.

[redacted] LNG peaking facilities will provide a much better fit as a supply source at or near peak levels on the demand curve, since there are typically only a handful of days a year in which demand rises to these levels. Figure 2-2 below shows how LNG will strategically fit into the Utilities' portfolio during high demand periods. The firm demand load duration curve in this figure is based on daily firm demands during the 2018/19 gas year (Nov-Mar), which is when demand reached levels at or near peak conditions for the Utilities.

As shown above, there were nine days in 2018-19 in which the combined firm demand for both Utilities rose above [redacted]. In similar circumstances in the future, a combined maximum daily quantity

(MDQ) of [redacted] of LNG peaking capacity could serve the ten highest days of that firm demand, with the Utilities' other resources — including contracted storage, interstate pipeline capacity and contracted firm gas supply — providing sufficient resources to meet demands and reserve margins during the rest of the gas year. In this manner, including LNG in the Utilities' portfolios will provide an optimal fit of supply and deliverability during short-term, high demand periods.

Absent new peaking facilities, the Utilities would have to secure the same amount of interstate pipeline capacity to cover these high demand periods, with that capacity typically contracted for 365 days a year even though it is needed for only 10 days. The Utilities would also need to acquire firm peak supplies from gas suppliers to fill that pipeline capacity on those days, but such supplies are 1) relatively expensive; 2) in some cases unavailable for the short duration needed; and 3) typically limited to a 10-day use regardless of the amount actually needed or used.

The proposed peaking facilities will be located downstream of the interstate pipeline system on the Utilities' distribution systems and will thus take advantage of the Utilities' built-in system deliverability. The firm supply will be stored on-site and ready for re-delivery during either high demand or high priced conditions or year-round as required.

Accordingly, the Utilities propose to build LNG peaking facilities to provide a 10-day supply of storage to serve peak demands on their respective systems. The total incremental deliverability need for the Utilities is approximately [redacted],[7] which translates to an LNG storage inventory of approximately [redacted]. The combined liquefaction systems will be sufficient to fully refill the entire storage capacity during the non-winter months.

2.2.3 Economic Solution for Customers

LNG peaking facilities are the optimal solution to the Utilities' identified needs for additional deliverability to their distributions systems. Under base case assumptions, the proposed LNG peaking facilities will provide the Utilities customers with a combined $209 million, or 32%, in net present value ("NPV") savings when compared to the lowest cost alternative. [redacted] The economic analysis that supports and describes these savings is

[7] The total deliverability is comprised of; [redacted]

described further in Section 2.3 and in **Volume I Appendix F, Attachment 3.** The proposed facilities represent a measured approach to meet growth in an economic way by not overbuilding the pipeline system. [redacted].

The analysis performed by the Utilities was very robust and included numerous sensitivities to key assumptions to test the overall economics of the LNG facilities. The sensitivity analysis included combinations of all the sentivities and is described in more detail in Section 2.4. In all, 486 separate sensitivities and sensitivity combinations were studied. For WG, the Project is lower in cost [redacted] under all sensitivities. For WE-GO, the Project is lower in cost than the pipeline alterantives under all sensitivities except two (and by only $6 million or less) when the worst-case assumptions for the Project are combined with the best-case assumptions for [redacted] alternatives.

2.2.4 Increased Reliability and Resiliency

From a system reliability and resiliency perspective the combination of LNG utility ownership and the plant's downstream location to a given interstate pipeline system provides a firm, short-term supply alternative to real-time upstream pipeline flow disruptions on that system, scheduled or unscheduled[8]. [redacted]

Furthermore, to the extent an LNG facility feeds into an integrated downstream distribution system that receives gas from more than one pipeline its reliability and resiliency value is further enhanced [redacted] The proposed LNG facilities at Ixonia and Bluff Creek will share these characteristics.

[8] [redacted]

[redacted]

2.2.5 Direct Control

Typically, natural gas utilities are dependent on interstate pipelines for the majority of their supply during the winter months. This will continue to be true even with the proposed LNG peaking facilities, but to a lesser degree. The proposed facilities will give each of the Utilities a localized source of firm deliverability and stored supply embedded in their distribution system over which they have direct control.

[redacted] The Utilities will have direct control of the design, construction and operation of the facilities and the Commission will have direct oversight over these elements. [redacted]

In addition, having the LNG facilities located on the Utilities' distribution system provides load balancing, supported by firm supply and 24-hour availability. Balancing is needed by the Utilities to mitigate the impact of unanticipated, real time changes in customer end-use patterns and market area termperature variation from the forecast. As demand grows the level of load balancing products also increases. [redacted]

2.2.6 Physical Gas Price Hedge

LNG storage provides a physical supply that can be dispatched quickly, providing a physical supply hedge and arbitrage opportunities for the benefit of this Utilities' customers. With the proposed 10 days of service and the ability to refill relatively quickly, the Utilities will be able to execute on these opportunities more frequently than if they had a lower level of storage.

2.2.7 Managed, Self-Controlled Expandability

The proposed LNG peaking facilities will be designed to be the "hubs" of a "hub and spoke" framework that will allow for the future addition of LNG units at other key locations on the Utilities' systems to address reliability and growth needs. The proposed sites will also have the potential of expanding liquefaction, vaporization and/or storage capacity. This will provide a further physical hedge [redacted] This will provide more price certainty for the Utilities' customers. [redacted]

2.2.8 Reduced Environmental Impacts

[redacted] The proposed facilities will be strategically placed on the Utilities' existing distribution systems and will have significantly lower environmental impacts [redacted]

[redacted]

2.2.9 Synergies and Benefits with Common Systems

There are inherent benefits and synergies in having the same equipment, procedures, operations and maintenance practices, and capital planning shared by multiple utilities, particularly when those utilities are in the same holding company system. The Utilities' customers will benefit by realizing the cost savings achieved by this structure.

2.2.10 "No Regrets" Solution

The additional deliverability provided by the proposed LNG peaking facilities, while substantial, will constitute [redacted] of the overall capacity in the market areas they will serve. Based on the Utilities' forecasted increases in demand [redacted] As explained below, whether the forecasted demand is higher or lower than expected in the based demand forecast, the LNG peaking facilities provide a "No Regrets" solution.

In the past six years, the Utilities' projected firm peak demand has increased [redacted] LNG facilities provide a much better solution for planning for future load growth, while also providing peaking supply and capacity to the portfolio. [redacted]

[9] [redacted]

Going in the other direction, even if the expected demand increases do not transpire, the proposed facilities will still provide value to the Utilities' customers. As technology continues to advance in renewable generation and battery storage, it is reasonable to surmise the demand for natural gas fired generation may decrease, and along with that a reduced need for combined cycle electric generators to hold FT capacity. [redacted] In a future where less natural gas is used regionally for electric generation, additional capacity on the pipelines could become available. [redacted]

In a situation where the demand does not meet the growth assumptions underlying this proposal, the Utilities would have the ability to displace higher priced firm capacity contracts with the interstate pipelines and still gain all the benefits of increased reliability and resiliency as well as price hedging. Increasing the LNG facilities' vaporization capacity is a relatively inexpensive way to increase deliverability and is an option that can directly offset existing FT as costs continue to rise for third party providers. In these ways, the proposed LNG peaking facilities will provide a physical price hedge against rising costs for pipeline capacity.

2.2.11 Summary of Attributes

LNG peaking capacity is clearly the Utilities' best option to manage their near term load growth requirements. LNG peaking facilities will also provide the Utilities with significant strategic value in the form of control over long term costs and system reliability and resiliency. The proposed facilities will insulate customers from the increasing costs and risk profile of third party interstate pipelines. The LNG peaking solution will allow the Utilities to "right size" their gas supply portfolio while providing both the Utilities and Wisconsin significantly more control over long term gas supply costs and risks.

2.3 Consistency with Future Projects

The Project is part of the Utilities' overall strategy to increase reliability, enhance resiliency and meet increasing demand in Wisconsin. .

2.4 Alternative Analysis

The Utilities currently meet the majority of their firm peak obligations in the service areas identified above in Section 2.0 by taking supply deliveries from the ANR and Guardian pipelines. An alternative of "Doing Nothing" is not prudent nor is it feasible because incremental pipeline capacity in the amounts needed to cover future load growth is not available.

[redacted]

[redacted]

Table 2-1: [redacted]

[redacted]

[redacted]

[redacted]

- LNG capital cost estimate
- LNG fixed and variable cost estimate
- LNG hedge value

[redacted]

- Escalation rate for forecasted costs

When combined with the all the qualitative attributes and benefits summarized in Section 2.1.11, the Project provides overwhelming qualitative and quantitative benefits to the Utilities customers. Detailed descriptions of the methodology and assumptions used in the economic analysis and the results of the overall analysis can be found **Volume I Appendix F, Attachment 3**. In addition, the Utilities are also providing the Economic Model, with formulas intact, in **Volume I Appendix F, Attachment 4**.

2.5 Energy Conservation and Efficiency Analysis

Wis. Stats. §196.025(1) requires the Commission, to the extent cost-effective, technically feasible and environmentally sound, to implement the priorities under Wis. Stats.§1.12(4) in making all energy-related decisions and orders. In turn, §1.12(4)states that in meeting energy demands, the policy of the state is that, to the extent cost-effective and technically feasible, options be considered based on the following priorities, in the order listed:

(a) Energy conservation and efficiency.
(b) Noncombustible and renewable energy resources.
(c) Combustible nonrenewable energy resources, in the order listed:
    1. Natural Gas.
    2. Oil or coal with sulfur content of less than 1%.
    3. All other carbon-based fuels.

The energy-related decision presented to the Commission in this proceeding is whether it should authorize construction of the Project. The purpose of the Project is to increase reliability and provide additional natural gas supply and capacity to the southeast Wisconsin based on the forecasted need. The methodology and development of the demand forecasts include energy efficiency. Additional conservation activities, renewable resources, or any other energy priorities listed in Wis. Stats. §1.12(4) cannot provide a means to provide additional pipeline capacity and supply in the area. Therefore, the Project satisfies the requirements of the energy priorities law.

2.6 Pipeline Route Evaluation

After pipeline routes are identified, recent parcel data will be obtained from local municipalities and/or counties, as appropriate. This data will be used to provide maps of privately owned parcels; public properties; tribal or other types of properties; political subdivision boundaries; and townships, ranges, and sections near each proposed Project Site and pipeline route. These maps will be provided in a supplemental filing.

3.0 ENGINEERING DATA

3.1 Proposed Project

As discussed in Section 1.0, the Utilities will be constructing LNG peaking facilities and corresponding natural gas pipeline near Ixonia, and Bluff Creek. Bluff Creek and Ixonia sites will include liquefaction, storage, vaporization, and truck loading/unloading. .

3.1.1 Technology and Major Components Required

The Bluff Creek and Ixonia sites will each include one LNG train Each LNG train will include a Feed Gas Pretreatment System and a Liquefaction Unit capable of separating heavy hydrocarbons from the inlet gas stream during the initial cool down steps of the liquefaction process.

The Liquefaction Unit will cool the natural gas until it changes to liquid form and send it to the onsite storage tank. Gas that evaporates from the upper surface of the liquid (boil-off gas) is captured, compressed, and sent back into the natural gas distribution pipeline.Each site can accommodate truck loading or unloading of LNG.

When needed to support the communities natural gas needs, the stored LNG is vaporized by the Vaporization Units and discharged back into the natural gas pipeline.

These key steps of Pretreatment, Liquefaction, Storage, Truck Loading/Unloading , and Vaporization are discussed in the following sections.

3.1.1.1 Feed Gas Pretreatment and Liquefaction Systems

Incoming natural gas for the LNG liquefactions systems will be pipeline quality natural gas. Each pre-treatment unit will be sized to handle a normal flow of feed gas and remove carbon dioxide, water, and mercury to meet the gas specifications required at the liquefaction unit.

The Liquefaction Unit liquefies treated natural gas, as well as removing and recovering heavy hydrocarbon components. Natural gas from the pre-treatment system enters the Liquefaction Cold Box and is first cooled to an intermediate temperature to condense heavy hydrocarbons. The condensed heavy hydrocarbons are separated and reheated before discharging to a warm heavy hydrocarbon separation system. The gas remaining after separating the heavy hydrocarbons is liquefied and subcooled to LNG against cold refrigerant. The LNG is then flowing to the LNG storage tank.

3.1.1.2 LNG Storage and Vaporizaton Systems

LNG will be stored in single containment LNG storage tanks The inner tank will be constructed of a cryogenic alloy, 9% Nickel steel and will serve as primary liquid containment. The outer tank will be constructed of carbon steel and will serve to contain the perlite insulation of the primary tank.

Secondary containment will be provided by an earthen impoundment.

The tanks will include in-tank, submersible pumps for sendout of LNG to the vaporization system or the truck loading system.

Boil-off gas (BOG) generated by the LNG storage tank will be collected and compressed in the Boil-off Gas Compressors which will increase the pressure of the gas to the point in can be reinjected into the gas supply pipeline.

The LNG will be vaporized and sent to the Utilities' distribution system gas pipelines to meet seasonal demand.

3.1.1.3 LNG Truck Loading/Unloading System

Each Site will be equipped with a truck loading / unloading facility. The facilities will provide the ability to provide liquefied natural gas from one site to the other, when needed, during the summer refill periods. Also, as previously noted, this capability will also allow each Site to serve as a supply source of LNG to other potential future satellite locations that could be owned by the Utilities, or another (affiliate or non-affiliate) utility in the future.

3.1.1.4 Electric Power

Electric power for the Facility will be obtained from WEPCO, the local electric utility provider.

Within the Facility, auxiliary transformers (AT) will be utilized to lower the incoming utility voltage to 4160VAC to power the Facility's 4160VAC switchgear. The 4160VAC switchgear will power the major electrical loads greater than 250 HP. Station service transformers (SST) will feed various 480VAC motor control centers (MCCs) that distribute power to smaller motors, utilities, lighting transformers, and other common systems. ATs and SSTs will be located outdoors. Switchgear and MCC's will be located in the facility electrical room. In general, all common systems required to operate the facilities will be powered from the electrical room; typical loads in this category include:

- Pretreatment System
- Liquefaction System

- Boil-off Gas Compressors
- LNG in-tank pumps
- Vaporization equipment
- Truck loading/unloading
- Admin buildings including Control Room
- Fire Protection System
- Site Security System
- Site lighting

3.1.1.5 Emergency Power Supply

An Emergency Generator will provide medium voltage backup power in the event of a loss of grid-supplied power for safe emergency shutdown and vaporizer operation. The emergency generator will be natural gas fired.

Typical loads for the emergency generator include:

- Instrumentation systems for HDMS
- UPS backup power
- Switchgear controls
- Flare and Vent System ignition controls
- Fire water pumps
- Boil-off Gas Compressors
- Vaporization
- Emergency lighting system
- Site Security System

The UPS System will be capable of supporting the ESD system for safe emergency shutdown of the plant if both the grid power and emergency generator are out of service.

3.1.1.6 Facility and Instrument Air Systems

Each facility will include electric driven Air Compressor Packages, each sized for the operating demand (Facility and instrument air) of the LNG system.

Each compressor package will include an oil free air compressor and instrument air dryers. A dry air receiver will be sized to provide compressed air throughout an ESD procedure without the air compressors in service.

3.1.1.7 Refrigerant Storage

Refrigerant storage will be provided at the sites where liquefaction is installed.

3.1.1.8 Potable and Service Water

Potable and service water for the Facility will be provided from city water or groundwater wells. Service water will be used in utility stations and potable water will be used for safety showers and buildings.

3.1.1.9 Fire Water

The Fire Water System provides water to fire hydrants, monitors and fixed suppression systems in the event of a fire within the Facility. The primary source of fire water for firefighting and fire exposure control within the Facility is from the Service/Fire Water Tank or an acceptable municipal water source. The volume provided in the tank is sufficient to provide water to the largest system demand for two hours.

3.1.1.10 Flares

Cryogenic vents from relief valves containing LNG will be collected and routed to a cold flare designed to handle cryogenic temperatures. Vents from natural gas services will be routed to a warm flare. The flare stacks may be independent with two flare tips or the headers may be combined at a flare knock out drum into a single stack.

3.1.1.11 Other Utilities

3.1.1.11.1 Effluent Water Systems

Stormwater that does not collect in the LNG tank impoundment or in other process area containments will be routed away from the plant area offsite per the applicable permit.

Stormwater that collects in the LNG tank impoundment or in other process area containments will be routed to a sump within each containment area. An Erosion Control Plan and Stormwater Management Plan will be included in a supplemental filing in **Appendix P of of Volumes II and III**.

Sanitary waste will be stored in a holding tank for periodic removal.

3.1.1.11.2 Fuel Gas System

A common fuel gas system for the Facility will provide fuel gas for operation of fired equipment within the LNG system. The fuel gas source will be from the distribution pipeline.

3.1.2 Physical Dimensions of the Facilities

See **Appendix A** of **Volumes II and III** for the general arrangements drawings for each site. The arrangement of the plant with respect to adjacent properties was determined based on code prescribed vapor dispersion limits and calculated thermal radiation zones.

3.1.2.1 Vapor Dispersion Limits

Flammable vapor dispersion limits will be calculated using DEGADUS softwareas defined in the Wisconsin Administrative Code and NFPA 59A.

3.1.2.2 Thermal Radiation Zone

Thermal exclusion distances for various heat flux levels will be calculated in accordance with the Wisconsin Administrative Code using the "LNGFIRE III" computer program.

3.1.2.3 Hazardous Area Classification Basis

Area hazard classifications will be determined in accordance with NFPA 59A and NFPA 70. Acceptable protection techniques that are defined in NFPA 70 will be used to mitigate hazards in the classified areas. Specific protection measures to address each hazard will be determined during detailed engineering and design.

3.1.2.4 Hazard Detection System

The Hazard Detection Management System that will be installed at each Facility will be based on providing a Proprietary Supervising Station Fire Alarm System that meets the requirements of NFPA 72 for LNG applications and International Code Standards and project specifications for the process, storage and utility application of each Facility.

The HDMS will include combustible gas, toxic gas, low temperature, heat, smoke, and flame detectors. A description of hazard detection equipment and associated warning equipment that will be installed at the Facility is included in the NFPA 59A Fire Protection Evaluation that will be prepared prior to detailed design.

3.1.2.5 Fire Suppression Systems

Details of the fire suppression system will be determined based on the NFPA 59A defined Fire Protection Evaluation. It is anticipated that the following fire suppression systems will be utilized as part of the overall fire protection system:

- Dry chemical fire suppression systems will be utilized at areas where LNG pool and jet fires are anticipated.
- Water-based fire suppression systems will be used to protect areas of the facility that do not have a risk of direct LNG pool or jet fire scenarios.

3.1.2.6 Security Plan

A site security assessment will be performed that includes hazards, threats, vulnerabilities, and potential consequences. The site security assessment will be available to the authority having jurisdiction and will include, at a minimum, the following:

- Security System with controlled access that is designed to prevent entry by unauthorized persons.
- Peripheral fence
- Security communication system
- Security monitoring and warning systems
- Warning signs

3.1.3 Expected operation

References to LNG as "peaking" supply does not fully describe the benefits provided to the Utilities in terms of this source of firm deliverability during real time operations. To that end, the following describes how the Utilities intend to operate the LNG's vaporization and liquefaction systems across the entire gas year to meet not just one but several firm deliverability goals.

3.1.3.1 Vaporization

Winter Period - On both a planning and supply operations basis, the proposed LNG facilities provide short term (up to 10 days) firm supply and firm capacity for the Utilities firm sales customers during very cold and peak temperature periods in the winter months (November-March). In this manner LNG displaces what would have otherwise been served through contracts for firm pipeline transport services; contracted storage; firm balancing; and, third party supplies in the Utilities' annual Gas Supply Plans. Given the nature of the Utilities' load curves LNG is better-suited to meeting the ten (10) highest winter demand days than those alternatives and is therefore the traditional or standard rationale for building LNG into the Utilities' supply and capacity portfolios.

Shoulder Period - LNG also provides the Utilities with a real time solution to very cold and peak temperatures in the spring shoulder month of April. With the preceding winter's supply contracts expired; with seasonal firm transport contracts at term or re-directed to storage operations; and, with storage

inventories exhausted, significantly colder-than-normal April temperatures can present a unique firm supply challenge as the industry switches to summer time operations. To the extent that a Utility can utilize available LNG inventory to fill firm supply gaps in April it reduces the need to further press its storage inventories (if available), purchase of comparably high-priced gas supplies, and mitigate its exposure to pipeline penalties.

Year-Round - As a Utility-controlled source of firm deliverability, LNG can serve to mitigate the Utilities' exposure to upstream pipeline and downstream Utility distribution system supply disruptions. Gas supply disruptions to and within the Utilities' distribution systems can be anticipated as in the case of a planned out-of-service for maintenance. In this instance LNG can be used to offset or back-up supply work-arounds on a planned basis. Disruptions can also be unanticipated as the result of system mechanical failures (e.g. compression, regulation, metering) or, in the worst case, by line strikes. In these real time instances LNG, when connected to sufficiently-sized, integrated distribution facilities (e.g. Bluff Creek and Ixonia distribution laterals), provides firm deliverability in as near to a real time manner as is available. At a minimum, in the case of anticipated or unanticipated supply disruption LNG provides the Utilities with a firm, self-controlled back-up supply source year round.

3.1.3.2 Liquefaction:

Summer Base Load - As proposed, the LNG project would be designed to provide the Utilities with up to ten (10) days of gas supply at each plant's prescribed maximum delivery rate (vaporization capability). Notwithstanding operational use to meet the various requirements spelled-out above, on-going vaporization due to inventory boil-off will result in available working inventory to less than the maximum ten (10) days of service. In general, it is the Utilities' plan to fill tank inventory in-advance of the upcoming winter period in a ratable, base load manner during the preceding summer period when gas supply availability and pricing are expected to be more favorable than other times of the gas year. In this way, buying gas supply as LNG feedstock (for liquefaction) is very similar to buying gas supply for injection to storage with the added benefit of making better use of the Utilities' annual Guardian FT services by delivering additional gas supply into southeast Wisconsin during the summer months.

Year-round - Over the course of the gas year as inventory is used for distribution system supply operations; for feedstock to other utility LNG operations; and, as the result of on-going boil-off, liquefaction operations will take place to protect the utility's ability to vaporize across the gas year for the purposes described above. It is the Utilities' plan to manage each plant's inventory to a minimum level of three (3) days of working, maximum vaporization quantity (MDQ) in addition to the respective base inventory needed to support on-going operations (tank pump requirements, boil-off) across the gas year.

The Utilities will accomplish this through the purchase and delivery of gas supply through existing term supply agreements, or from the spot market as circumstances require.

The three (3) day inventory minimum is established as an absolute floor needed to provide full deliverability across a weekend and holiday period when incremental third party gas supply is typically less available; when the use of leased firm storage service can be limited by contract terms and/or storage field operational status; and, as a backstop to the upstream pipeline and downstream distribution system supply disruptions referenced above. Because liquefaction is a mechanical process with physical limitations, then depending on where tank inventory levels are in terms of potential need (demand) liquefaction will commence in-advance of inventory actually declining to the three (3) day minimum.

3.1.3.3 Arbitrage Opportunities

First and foremost, the Utilities are fully committed to the use of the proposed LNG for the purposes of meeting the vaporization and liquefaction requirements set-out above. However, given the capability to liquefy throughout the year combined with adequate capacity to and from the facility, Utility owned and operated LNG provides a substantial physical hedge against natural gas price spikes by providing a real time, on-system alternative to market supply being sold at high prices, albeit in the short-term.

In addition to the above, to the extent that the Utilities are presented with opportunities to safely adjust planned liquefaction and vaporization schedules for the purpose of capturing favorable forward gas price differentials (or avoiding unfavorable gas costs) as compared to other sources of supply, the Utilities can adjust LNG operations accordingly and take the steps necessary to lock-in the benefits for the customer.

3.1.4 Staging Areas and Temporary Workspaces

Staging, laydown, and temporary workspaces shown on General Arrangement Drawings will be provided in a supplemental filing in **Appendix A of Volumes II and III**.

3.2 Associated Facilities

The following sections provide information related to the associated facilities required for the Project.

3.2.1 Necessary Associated Facilities

Necessary associated facilities are the natural gas pipeline, valve locations, and meter stations, regulator stations, gate stations, and odorizing equipment.

3.2.1.1 Pipeline

The Project will require delivery of natural gas to each Site. After Project sites are identified, pipeline routes between each Site and existing natural gas distribution assets for each utility will be investigated. Once pipeline routes are identified, detailed maps of the location of each route will be provided in a supplemental filing.

Gas pipeline construction will begin following receipt of required permits and PSCW approvals. The actual construction will begin with work area preparation. Clearing and grading will be done if necessary to provide a level area to facilitate pipe-laying operations and transport of required construction equipment.

The main will be installed by a combination of open-cut trenching, directional drilling and jack and bore operations, as conditions dictate. Prior to trenching or boring, standard precautions including hot lining and locating will be taken to identify and avoid disturbance to any existing underground utility lines within road ROW or on private property. Material excavated during trenching will be temporarily piled to one side of the road ROW or acquired temporary easement, with topsoil and subsoil separated, if applicable. Any material not suitable for backfill, or in excess, will be hauled to a suitable location. Best management erosion control practices will be employed to minimize erosion during trenching, piling and construction activities. An Erosion Control Plan and Stormwater Management Plan will be included in a supplemental filing in **Appendix P of Volumes II and III**.

Road and driveway crossings will be accomplished by either open-cut trenching, where possible, or boring. Coordination with local officials to minimize traffic disruption will take place prior to construction. The timing of construction activities will be communicated to landowners surrounding the road ROW or acquired easement to minimize disruptions. Roads or driveways crossed by open-cut trenching will be restored in kind. Some ground disturbance, including brush-clearing, will be required along the proposed route to construct the pipeline. These activities are short-term, and any areas disturbed within the existing road ROW or acquired easement will be properly restored as allowed by the Site but still maintain future access to the pipeline for maintenance purposes.

Pipe sections will be delivered and positioned along the road ROW or acquired easement. Pipe sections will be lined-up on supports and welded to form a continuous pipeline along the trench or at the exit pit of a bore. A qualified inspector will visually and radiographically inspect completed welds. An external coating applied at the mill will protect the piping. Following inspection, a coating will be field-applied to

each weld joint or fitting. Coating on the rest of the pipe will be inspected and repaired as necessary and bores will be current drain tested to test for any coating abnormalities.

The trench bottom will be inspected to ensure it is free of rock and debris. If required, sand or soil bedding material will be placed in the trench bottom. The pipeline will be lowered into the trench using side-boom tractors. A final inspection will ensure the pipeline is properly placed on the trench bottom, that all bends conform to trench alignment, and pipe coating is not damaged. The trench will then be padded and backfilled, using trench excavation material and then will be compacted. Compaction will avoid future settlement. Road ROW and acquired easement will be restored to preconstruction conditions where permissible. Surface grading will be done to re-establish natural contours in areas not impacted by road construction. Decompaction will occur where necessary and re-vegetation will be compatible with preconstructioncondition and adjacent vegetation patterns. The pipeline will be both hydrostaticallytested and dried prior to being placed in service.

3.2.1.2 ROW Required

Right of Way requirements will be provided in a supplemental filing in **Volume I Appendix G**.

3.2.1.3 Valve Locations

Valve locations will be determined during detailed Project design and will be submitted in the supplemental filing.

3.2.1.4 Meter Stations, Regulator Stations, Gate Stations, and Odorizing Equipment

Meter station, regulator station, gate station, and odorizing equipment locations will be determined during detailed Project design and will be submitted in the supplemental filing.

3.2.2 Proposed Routes

After Project sites are identified, pipeline routes between each site and existing utility natural gas distribution assets will be investigated. Once pipeline routes are identified, detailed maps of the location of each route will be provided in a supplemental filing.

3.2.2.1 Factors Considered

See Section 1.2 for an overview of the Site selection process. The potential sites will be reviewed based upon their proximity to potential residents and communities in the area, environmental considerations, and the proximity to the associated natural gas pipe laterals. As part of this review, the Project team will

conduct field reconnaissance of potential site areas. This will provide an opportunity to assess potential environmental impacts in potential interconnection routing corridors.

3.2.2.2 Route Corridors

After Project sites are identified and potential pipeline routes are reviewed during field reconnaissance, the Project team will select proposed pipeline routes. A summary of routes considered and route corridors removed from consideration will be provided in a supplemental filing.

3.2.3 Alternative Routes

The following sections provide information related to contacts and consultations; issues or concerns; and how issues/concerns will be addressed in pipeline routing.

3.2.3.1 Contacts and Consultations

Once final LNG Site alternatives and pipeline routes are selected, the Utilities will initial a communication plan to inform the public about the Project and to solicit feedback from stakeholders. WEC plans to conduct public open houses and to send invitations to landowners, local, state, and Federal stakeholders. A summary of these public open houses and other public communications will be provided in a supplemental filing.

3.2.3.2 Issues or Concerns

WEC will provide a method for landowners and local, state, and federal officials to leave feedback on the Project during the public open houses. These comments will be provided in a supplemental filing.

3.2.3.3 Issues and Concerns Addressed

All feedback and comments received during public open houses will be reviewed by the Project team. A summary of issues and concerns will be provided in a supplemental filing in **Volume I Appendix C**, as well as mitigation measures or other methods to address concerns.

3.2.4 Impact Tables

After Project sites and pipeline routes are identified, PSC Impact Tables will be completed for the Project. Impact tables will indicate the type and date of source materials and methods used to determine table inputs. PSC Impact Tables will be provided in a supplemental filing in **Appendix Q of Volumes II and III**.

3.2.5 Route Segments

The following sections provide correspondence information related to the natural gas pipeline routes.

3.2.5.1 WisDOT Roads and Correspondence

If a route or route segment will be located within or across WisDOT ROW, the Project team will provide documentation that the proposed route is generally acceptable to WisDOT. Future correspondence with WisDOT will be provided in a supplemental filing in **Volume I Appendix D**.

3.2.5.2 Town or County Roads and Correspondence

If a route or route segment will be located within or across town or county road ROW, the Project team will provide documentation that the proposed route is generally acceptable to the town and/or county. Future correspondence with these agencies will be provided in a supplemental filing in **Volume I Appendix D**.

3.2.5.3 Railroad Correspondence

If a route or route segment will be located within or across railroad ROW, the Project team will pursue crossing permits from the railroad owner(s). Owner contact information and the railroad status (active or abandoned) will also be provided. Future correspondence with railroad owners will be provided in a supplemental filing in **Volume I Appendix D**.

3.2.6 Construction Impacts

See Section 5.2 for a discussion of potential construction impacts to property owners; mitigation measures; and safety procedures, methods, and timing of notification during construction.

3.2.7 Off-ROW Access Roads

After Project sites and pipeline routes are selected, any off-ROW access road required will be identified. Off-ROW access roads will be mapped and the dimensions of each road will be provided. The Project team will provide construction methods for each road as well as reasons for the necessity of each off-ROW access road. Potential land cover impacts will be provided. Any post-construction modifications to off-ROW access roads will be described in a supplemental filing in **Volume I Appendix G**.

4.0 PROJECT COSTS

4.1 Capital and Construction Costs

4.1.1 Cost of Facility and Associated Facilities

Table 4-1: Project Costs

Major Plant Account	Bluff Creek Site Cost Estimate	Ixonia Site Cost Estimate
374 - Land and Land Rights	[redacted]	[redacted]
375 - Structures and Improvements	[redacted]	[redacted]
376 - Mains	[redacted]	[redacted]
378 - Measuring and Regulating Station equipment	[redacted]	[redacted]
Total	[redacted]	[redacted]

4.1.2 Depreciation Rates

The LNG facilities and associated pipelines will be depreciated over a 40-year life on a straightline basis.

4.2 Financing and Rate Recovery

4.2.1 Financing

The cost of the project will be met from internal sources and will not require the issuance or sale of securities by the Utilities.

4.2.2 Rate Recovery

For ratemaking purposes, the Utilities propose a return on Available Funds Used During Construction of 100% of their Construction Work in Process at their respective weighted average cost of capital. The Utilities will recover their investment in the facilities by including it in rate base and recovering the return and of the investment in base rates. The Utilities propose to recover their fixed labor and O&M costs in base rates and their variable O&M costs through their Purchased Gas Adjustment Clauses ("PGAC").

These variable O&M costs include the energy and material costs to vaporize LNG when the facilities are dispatched to serve peak demands and to liquefy gas to refill the storage facilities after they have been dispatched. Recovery of these costs through the Utilities' PGACs is reasonable and appropriate because these variable O&M costs are dependent on weather and market conditions beyond the Utilities' control

and therefore cannot accurately be forecasted for inclusion in base rates. These costs are analogous to the fuel costs to start up an electric generating facility upon being dispatched by MISO, which are recovered through the electric utility's fuel window. PGAC treatment of LNG liquefaction, vaporization and, if necessary, trucking costs is also consistent with the similar treatment of the cost of LNG delivered (by truck) to WG's Rice Lake LNG peaking facility. That cost, which includes the vendor's cost of liquefaction, vaporization and delivery costs, is collected through WG's PGAC. [Note, however, that liquefaction and vaporization costs at Oak Creek LNG are not collected through PGAC.- Is there a distinction we can draw to show that Rice Lake is more appropriate – more recent or larger scale – more in line with the Proposed Project?]

4.3 Forecasted Costs

Forecasted costs for both sites are provided in Table 4-2:

Table 4-2: Forecasted Costs

Cost Category	Bluff Creek Site	Ixonia Site
Annual O&M Costs	[redacted]	[redacted]
Annual Maintenance Capital Costs	[redacted]	[redacted]
Annual Liquefaction and Vaporization Costs	[redacted]	[redacted]
Total	[redacted]	[redacted]

[redacted]

5.0 COMMUNITY IMPACTS

5.1 Communication with Potentially Affected Public

The following sections describe the anticipated public communication activities for the Project.

5.1.1 Communication with Public

Once final LNG Site alternatives and pipeline routes are selected, WEC will initiat a communication plan to inform the public about the Project and to solicit feedback from stakeholders. WEC plans to conduct public open houses and to send invitations to landowners, local, state, and Federal stakeholders. A summary of these public open houses and other public communications will be provided in a supplemental filing in **Volume I Appendix C**.

5.1.2 Public Information Meetings

As described in Section 5.1.1, WEC plans to conduct public open houses and to send invitations to landowners, local, state, and Federal stakeholders. A summary of these public open houses and other public communications will be provided in a supplemental filing in **Volume I Appendix C**.

5.1.3 Public Outreach Mailings and Handouts

All public outreach mailings and public open house handouts will be provided in a supplemental filing in **Volume I Appendix C**.

5.1.4 Public Comments

WEC will provide a method for landowners and local, state, and federal officials to leave feedback on the Project during the public open houses. These comments will be provided in a supplemental filing in **Volume I Appendix C**.

5.2 Construction Impacts to Property Owners

The following sections provide information related to impacts to property owners due to construction of the Projects, as well as mitigation measures to limit inconveniences to neighboring property owners and describe safety procedures, methods, and timing of notification during construction.

5.2.1 Mitigation of Inconveniences to Property Owners

The Projects will require the construction of each LNG facility as well as connection to the existing natural gas transmission system near each proposed LNG Site. Access roads will be constructed from existing roads to the LNG Sites. These roads will be asphalt paved or monitored and wetted or swept clean to minimize fugitive dust that may occur due to construction equipment. Signage will be erected in

advance of construction where road closures or land closures are required. WEC will coordinate with local road authorities on the signage and construction procedures related to road/lane closures to minimize traffic disruptions. If a natural gas pipeline connecting to the LNG Sites requires road crossings, the crossings will be directionally bored to minimize traffic inconveniences. Disturbed vegetation in temporary construction areas will be restored according to the vegetation restoration plan (see Section 8.11).

5.2.2 Safety Procedures, Methods, and Timing of Notification during Construction

WEC will coordinate with local road authorities on the signage and construction procedures related to road/lane closures to minimize traffic disruptions. The natural gas pipeline will require excavations during construction. Any excavation areas will be properly marked and/or fenced off during construction hours and overnight, if necessary. Letters will be sent ahead of construction to inform property owners of timing. Any driveway crossings or other access routes that may disrupt individual property owners will be communicated and coordinated with each property owner ahead of construction on their property.

5.3 Potential Impacts to Agricultural Lands

The Projects are anticipated to be located in Jefferson, and Walworth counties. These counties have several different types of farming activities, including corn, pasture, and potato/vegetable fields. Once final LNG Site alternatives and pipeline routes are selected, specific types of farming potentially impacted will be identified within the Project footprint and ROW. Potential impacts to Farmland Preservation Program parcels will also be determined at that time.

5.3.1 Mitigation and Minimization of Construction Impacts on Agricultural Lands

Construction of the natural gas pipelines will occur after harvest and/or before spring planting to minimize impacts to agricultural areas. Construction will be contained within the construction ROW. Matting will be used in wet areas to minimize soil disturbance outside of winter months.

5.3.2 DATCP Agricultural Impact Statement

An agricultural impact notice will be submitted to the Department of Agriculture, Trade, and Consumer Protection (“DATCP”) after final LNG Site alternatives and pipeline routes are identified.

6.0 NATURAL RESOURCES IN LNG PLANT AREA

6.1 Mapping Requirement

Project maps are included in **Volume I, II, and III**.

6.2 History of Site and Grounds

Once final LNG Site alternatives and pipeline routes are selected, a Phase I Environmental Site Assessment (ESA) will be conducted for each LNG Site Alternative. This ESA will investigate available records for historical land use and ownership, as well as any past or future remediation activities that may have occurred or are planned at each site.

6.3 Construction Areas

Once final LNG Site alternatives and pipeline routes are selected, final design of the Project will occur which will identify laydown areas, material storage, parking areas, and post-construction site restoration details.

6.4 Geology

The Project is within the Central Lowland physiographic province, which is the largest physiographic province of the United States. Elevations in this province are generally 2,000 feet or less. The Central Lowland province contains large areas of flat lands with geomorphic remnants of glaciation.[10] Within the Central Lowland province, the Project is within the Eastern Lake Section which is characterized by nearly level to rolling till plains, lake plains, and outwash plains. Low hills and ridges are formed by drumlines, bedrock-controlled moraines, and beaches in this section. Lake terraces, floodplains, dunes, swamps, and marshes can also be found. Elevation in the Eastern Lake Section ranges from 660 to 1,310 feet.[11] Bedrock in this region consists of primarily early Paleozoic shale, limestone, and dolomite rocks.

6.5 Topography and Soils

The following sections describe the topography and soils in each county considered for potential LNG sites. Site-specific topography and soil information will be provided after final LNG Site alternatives and pipeline routes are selected.

[10] NPS. (2017). Physiographic Provinces. Retrieved August 2019 from https://www.nps.gov/subjects/geology/physiographic-provinces.htm.

[11] USDA NRCS. (2006). Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. Retrieved August 2019 from https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_050898.pdf.

6.5.1 Jefferson County

6.5.1.1 Topography

Jefferson County is located in southeastern Wisconsin and is known for being primarily farmland. The topography of Jefferson County was influenced by glacial drift. Elevations for Jefferson County range from approximately 620 to 1200 feet above sea level. Areas in the central portion of the county from north to south generally have higher elevations that areas to the east or west, but topography is generally gently rolling to flat. The southeast corner of the county contains a more complex topography, with steep slopes and potholes.

6.5.1.2 Soils

Soils in Jefferson County include glacial till, outwash, lake-laid clay, silt and sand. These soils are conducive to farming. Houghton muck, 0 to 2 percent slopes, comprises approximately 7.9 percent of the soils in the county. These are poorly drained soils but are good for farming. Wacousta silty clay loam, 0 to 2 percent slopes, comprises 5.2 percent of the soils in Jefferson County and are very poorly drained. Kidder loam, 6 to 12 percent slopes, eroded, make up 4.2 percent of the county soils. These soils are well drained. Keowns silt loam, 0 to 2 percent slopes, comprise 4.0 percent of Jefferson County soils and are poorly drained.

6.5.2 Walworth County

6.5.2.1 Topography

Walworth County is located in the southeastern part of the state. An important topographical feature of Walworth County is its moraines and kettles, which show the different stages of glaciation in the region. Outside of these areas the topographic is generally level to slightly undulating. Elevations in the county range from approximately 800 to 1000 feet above sea level, with the northwestern portion of the county having higher elevations and more rugged topography.

6.5.2.2 Soils

Most of the soils in Walworth County were formed in loess or came from materials from glaciation in the area. Miami silt loam, 2 to 6 percent slopes, amounts for 6.4 percent of the soils in Walworth County. These are known as well drained soils and are considered prime farmland soils. Plano silt loam, gravelly substratum, 0 to 2 percent slopes, comprises 6.3 percent of the soils in the county. These soils are well drained as well and considered as prime farmland soils. Pella silt loam, 0 to 2 percent slopes, make up 6.1

percent of the soils in the county, and are poorly drained soils. McHenry silt loam, 2 to 6 percent slopes, comprise 5.7 percent of the soils in the county and are well drained, prime farmland soils.

6.6 Historical Resources

Once final LNG Project Site alternatives and pipeline routes are selected, the public land survey system (PLSS) locations of the LNG Site alternatives will be identified and a historical resources report will be prepared based on cultural resource surveys. The cultural resources study will be provided in a supplemental filing in **Appendix R of Volumes II and III**.

6.7 Existing Vegetative Land Cover (Excluding Agricultural Lands)

The following sections provide details related to the existing vegetation communities in each county considered for potential LNG Project sites. Detailed habitat assessment surveys will be completed once final LNG sites and pipeline routes are identified. Habitat assessment surveys will be included in a supplemental filing in **Appendix S of Volumes II and III.**

6.7.1 Jefferson County

The existing land cover in Jefferson County, excluding agricultural lands, is provided in Table 6-1.

Table 6-1: Jefferson County Land Cover

Land Cover Type	Acres in Jefferson County
Developed, high intensity	6803.5
Developed, low intensity	19652.0
Cool season grass	921.6
Warm season grass	13061.0
Pine	2520.6
Aspen/paper birch	12.0
Oak	5087.9
Central hardwoods	20554.9
Northern hardwood	1319.9
Open water	16070.4
Floating aquatic herbaceous veg	1013.5
Cattails	5524.3
Red canary grass	145.3
Other emergent wet meadow	20209.8
Broad leaved deciduous scrub/shrub	5722.6
Needle-leaved scrub/shrub	187.4

Land Cover Type	Acres in Jefferson County
Coniferous forested wetland	14353.4
Aspen forested wetland	718.9
Bottomland hardwoods	17351.5
Swamp hardwoods	1728.0
Mixed deciduous/coniferous forested wetland	11.1
Barren	246.3
Shrubland	34.1

Source: WDNR Wiscland Dataset

6.7.2 Walworth County

The existing land cover in Walworth County, excluding agricultural lands, is provided in Table 6-2.

Table 6-2: Walworth County Land Cover

Land Cover Type	Acres in Walworth County
Developed, high intensity	7415.7
Developed, low intensity	27344.4
Cool season grass	149.1
Warm season grass	5489.2
Pine	4364.4
Aspen/paper birch	720.8
Oak	24443.5
Central hardwoods	20792.9
Northern hardwood	230.5
Mix deciduous/coniferous forest	4.3
Open water	11379.1
Floating aquatic herbaceous veg	3813.6
Cattails	2694.9
Red canary grass	6.2
Other emergent wet meadow	9766.2
Broad leaved deciduous scrub/shrub	13432.9
Needle-leaved scrub/shrub	483.3
Coniferous forested wetland	1036.0
Aspen forested wetland	531.1
Bottomland hardwoods	1568.8
Swamp hardwoods	384.7

Land Cover Type	Acres in Walworth County
Mixed deciduous/coniferous forested wetland	483.5
Barren	601.9
Shrubland	990.2

Source: WDNR Wiscland Dataset

6.8 Invasive Species (Uplands and Wetlands)

Once final LNG Site alternatives and pipeline routes are selected, an invasive species survey will be conducted at each site and pipeline route to identify any invasive plant species. If invasive species are identified, WEC will mitigate the potential spread of the species in compliance with Chapter NR 40 Invasive Species Identification, Classification and Control Rule. During construction, WEC will include invasive species on construction plans and flag invasive species onsite. Construction equipment will be cleaned when moving from an invasive species area to a non-infested area.

In accordance with Chapter DATCP 20, WAC, seed mixtures that contain potentially invasive species or species that may be harmful to native plant communities will be avoided during revegetation activities. Seed mixtures will meet the minimum requirements in the Rules for Testing Seed, published by the Association of Official Seed Analysts.

6.9 Rare Species, Natural Communities, and ER Reviews

After Project sites and pipeline routes are identified, a habitat assessment survey will be completed, and an Environmental Reviewer will complete an ER Review which will indicate protected plant and animal species near the Project alternatives. The ER Review will be provided in a supplemental filing in **Appendix T of Volumes II and III**. The WDNR will provide follow-up actions and guidelines for construction in areas near protected species which will need to be taken to comply with state and/or federal protected species laws.

6.10 Wetlands and Permits

A level 1 wetland desktop delineation will be conducted after Project sites and pipeline routes are identified. The wetland delineation will be provided in **Appendix U of Volumes II and III**. The methodology for the desktop delineation will consist of reviewing several baseline datasets including, but not limited to recent high-resolution aerial imagery, USFWS National Wetland Inventory (NWI) data, Wisconsin Wetland Inventory (WWI) data, NRCS SSURGO hydric soils, LiDAR contours, and USGS topographic maps. The findings from this level 1 wetland desktop delineation will be summarized in a report with detailed wetland information and maps. The report will include a Wetland Rapid Assessment Methodology (WRAM) assessment of each wetland. A WRAM assessment evaluates wetland functions

and values based on various factors including vegetation quality, public/human use, wildlife habitat, water use/quality, and site degradation. The WRAM assessment results will be provided.

Wisconsin Chapter NR 103.04 defines unique and significant wetlands as "identified in special area management plans (SAMP), special wetland inventory studies (SWIS), advanced delineation and identification studies (ADID) and areas designated by the U.S. EPA under section 404 (c), 33 USC 1344 (c)". Wetlands will be assessed to determine if any are eligible for this designation.

Once the wetland assessments above are completed, mitigation measures will be designed to minimize potential impacts to wetlands during construction and operation of the Project.

6.11 Air Quality

6.11.1 Jefferson County

The existing air in Jefferson County is in attainment/unclassified for all NAAQS pollutants. A detailed air permit application will be submitted for the site, inclusive of predictive ground-level concentration modeling if needed. Air permitting will be coordinated with the WDNR.

6.11.2 Walworth County

The existing air in all of Walworth County was historically classified as nonattainment for the NAAQS of 1-hour Ozone standard. The county has since been re-designated to a status of maintenance. A detailed air permit application will be submitted for the site, inclusive of predictive ground-level concentration modeling if needed. Air permitting will be coordinated with the WDNR.

7.0 COMMUNITY RESOURCES IN LNG PLANT AREA

7.1 Community Resource Maps and Photos

After Project sites and pipeline routes are identified, maps containing nearby residences and other buildings will be created. Nearby schools, daycare centers, hospitals, and nursing homes will also be mapped for each Project site and pipeline route.

7.2 Current Land Ownership

After Project sites and pipeline routes are identified, recent parcel data will be obtained from local municipalities and/or counties. A supplemental filing will describe land ownership for each Project site and pipeline route, as well as temporary and permanent acquisition of land and ROW.

7.3 Local Zoning

After Project sites and pipeline routes are identified, a detailed zoning map will be created for each Project site and pipeline route. Local zoning ordinances, existing zoning, and proposed zoning changes will be discussed in a supplemental filing in **Appendix V of Volumes II and III**.

7.4 Land Use Plans

After Project sites and pipeline routes are identified, land use plans adopted by local governments will be obtained. Copies of relevant portions of land use plans will be provided and any conflicts with land use plans will be described in a supplemental filing in **Appendix W of Volumes II and III**.

7.5 Agriculture

After Project sites and pipeline routes are identified, farming activities (past and present) will be investigated at each Project site and along each pipeline route. Potential impacts to existing agricultural practices will be assessed at that time.

7.6 Conservation Easements and Programs

After Project sites and pipeline routes are identified, conservation easements and programs in the Project vicinity will be investigated. All properties with conservation easement agreements within 0.5 mile of Project sites and/or pipeline routes will be identified. The Project team will analyze the potential impacts to each easement or program. Lastly, any properties enrolled in Managed Forest Law or Forest Crop Law programs will also be identified near the Project sites and pipeline routes.

7.7 Communication with Potentially Affected Public

Section 5.1 provides a summary of anticipated public communication activities for the Project.

7.8 Demographics

The population composition of the Project counties is primarily white, with small percentages of black or African American, American Indian, Asian, and other races. Table 7-1 provides the population statistics by race for each county. The median household income levels within the Project counties range from $58,401 in Walworth County, to $59,215in Jefferson County. Walworth County had the greatest percentage of people whose income in the past 12 months was below poverty level (12.4 percent) while Jefferson County had the fewest (9.8 percent).

Table 7-1: Population Characteristics – Jefferson, and Walworth Counties

Demographic Group	Jefferson County	Walworth County
Total population	84,586	102,91
White (percent)	94.3	93.6
Black or African American (percent)	0.9	1.1
American Indian and Alaska Native (percent)	0.1	0.4
Asian (percent)	0.7	1.0
Native Hawaiian and other Pacific Islander (percent)	0.0	0.1
Some other race (percent)	2.0	1.8
Two or more races (percent)	2.1	2.0
Hispanic or Latino (percent)	7.0	11.1
Median household income	$59,215	$58,401
All people whose income in the past 12 months is below the poverty level (percent)	9.8	12.4

Source: U.S. Census Bureau American Community Survey 5-Year Estimates, 2013-2017

7.9 Local Government Impacts

After Project sites and pipeline routes are selected, local services provided by each municipality and/or county will be identified. This will include water distribution systems, medical services, fire protection, and police services. The Project team will assess what, if any, local government infrastructure and facility improvements would be required for the Project. Impacts of local budgets, potential revenue for each municipality and/or county, and community benefits will be evaluated.

7.10 Workforce

During construction, it is anticipated that the Project will create jobs during peak activity. Jobs will include construction management staff, site superintendents, skilled craftsmen, and engineers. It is anticipated that new permanent jobs will be created due to the Project.

7.11 Traffic, Roads, and Railroads

Construction traffic entering the Project sites will consist primarily of automobile traffic for laborers, construction management staff, contractors, equipment, and vendors. Deliveries of materials and equipment may be made by larger trucks and/or heavy haul vehicles. Within the construction site, traffic is anticipated to consist primarily of heavy construction and transport equipment.

The proposed construction entrances for each site will be identified and designed after Project sites and pipeline routes are identified. Vehicle access to all Project sites will be controlled with site security fencing. All Project construction sites will be operated as a closed worksite.

Traffic entering the Project sites will primarily consist of automobile traffic for labor, construction management staff, contractors, equipment, and vendors. Also, material and equipment deliveries may be made by large trucks as well as heavy haul vehicles.

The amount of daily automobile traffic will correspond to the Project workforce numbers onsite at a given time. The daily automobile traffic to the sites will increase in the initial stages of construction to peak months. The traffic will begin to decrease as construction nears completion. Material and equipment deliveries will be required during construction. Large deliveries will be scheduled to avoid peak traffic on local roads when possible.

Several railroads are located near the Project sites. After Project sites and pipeline routes are identified, potential site-specific impacts on the local transportation system and railroads will be analyzed.

7.12 Noise

Once final LNG Site alternatives and pipeline routes are selected, a sound study will be completed for the proposed Project Sites. The sound study will identify state and local noise regulations applicable to each Project. The Projects consist of natural gas pretreatment and liquefaction equipment, LNG storage tank, and vaporization equipment. Some of the Project equipment and processes will generate noise during operation. The sound study will be included as **Appendix X in Volumes II and III**.

The State of Wisconsin does not have noise regulations applicable to the Project. The PSCW does not provide overall noise level limits for this type of Project. The PSCW's Measurement Protocol for Sound and Vibration Assessment of Proposed and Existing Electric Power Plants provides measurement techniques and sound level information that must be provided to the commission to determine the effects of power plant noise on the surrounding environment. The information that the protocol requires includes various sound level metrics and figures.

Ambient sound measurements near the proposed Project locations will be collected during four separate time periods for each site as outlined in the PSCW protocol. These measurements will be taken to establish the existing sound levels in the area of the proposed Project.

Temporary noise sources associated with the Projects will include construction activities, such as vegetation clearing, grading and excavation, construction equipment operation, and structure installation. Construction noise would be generated during construction of the LNG facilities and the pipeline. Noise levels are expected to increase during construction of the Projects in the daytime hours due to the operation of construction equipment. If construction occurs during the nighttime hours, sound levels could also increase.

Future sound level estimates for the proposed Project will be predicted using noise modeling software in conjunction with the existing sound-level measurements. The software is a scaled, three-dimensional program, which considers air absorption, terrain, ground absorption, and reflections and shielding for each piece of noise-emitting equipment, and then predicts sound pressure levels at discrete locations and over a gridded area based on input source sound levels.

A detailed sound study will be completed for the Project. The Project will be designed to mitigate noise to levels below all applicable, identified regulatory requirements.

7.13 Odors

Pipeline natural gas is odorized to aid in leak detection. LNG is odorless, non-toxic, and non-corrosive. Therefore, no odors are expected to be perceived outside the plant boundary during operation of the LNG Facility. Temporary odors are anticipated during construction, associated with equipment and vehicle emissions. After construction is complete, these odors will no longer be created.

7.14 Residential and Urban Communities

The land use in the Project counties is primarily rural agricultural or undeveloped with scattered rural farmsteads. After Project sites and pipeline routes are identified, nearby residences will be identified near each LNG Site Alternative. Other sensitive sites will also be identified, such as hospitals, schools, daycares, and retirement homes. The potential impacts to those residences will be assessed in terms of noise, fugitive dust generation, aesthetics, lighting, traffic, and property value impacts. Mitigation will be proposed to minimize the impacts of the Project to residences.

7.15 Visual Impacts

The following sections describe potential visual impacts of the Project to the surrounding areas.

7.15.1 Project Appearance

At the Project sites, natural gas pretreatment and liquefaction equipment, LNG storage tank, vaporization equipment, and truck loading/unloading equipment will be installed. The equipment will be installed in a mixture of outdoor and indoor services as defined in the general arrangement plan within **Appendix A of Volumes II and III**. Infrastructure, equipment, piping, tanks, pumps, and materials will be installed new. Compression equipment will be either gas turbine or motor driven. The vaporization system will either be an indirect water bath type or a shell and tube type vaporizers. LNG storage tanks will be installed within a berm.

7.15.2 Scenic Roads in the Project Area and Potential Impact

The closest scenic byway to all of the sites is the Great River Road, a National Scenic Byway located across the state along the western boundary of Wisconsin and the Mississippi River. Due to the distance from this scenic byway, it is anticipated that the Project will not impact any scenic roads in the area.

7.15.3 Lighting

The following sections provide details concerning lighting during construction and operation of the Project, as well as potential impacts of light on adjacent land uses and local ordinances that relate to the proposed lighting plans.

7.15.3.1 Site Lighting Plan for Construction

The Project will require night lighting for safety and security during construction. The Project sites, temporary laydown areas, parking areas, and work zones may also need to be lighted at times during winter workdays or second shifts. Outdoor light fixtures will be shielded and directed downward to minimize light visible to adjacent properties. Impacts from lights will be further mitigated by scheduling the majority of construction activities during daylight hours.

7.15.3.2 Site Lighting Plan for Operations

Light emissions at all Project sites will increase compared to current levels of generated light. It is likely that the Project sites do not have lighting installed currently. The Project sites will require exterior lighting for safety and security. Lights will be required near structures on the property. Access roads, parking areas, and walkways will be illuminated with lighting fixtures on poles and/or structures. Building entrances will be illuminated with fixtures mounted directly above doors. Outdoor light fixtures will be shielded and directed downward to minimize light visible to adjacent properties. Any floodlights required for the operation of the Project will be directed inward towards the facility and will have top and side shields.

7.15.3.3 Potential Impacts of Site Lighting

Residences and businesses near Project sites may experience an increase in lighting impact. Once final LNG Sites are identified, a more detailed analysis of potential lighting impacts will be assessed.

7.16 Parks and Recreation Areas

The following sections provide a high-level overview of parks and recreation areas in Jefferson, and Walworth counties.

7.16.1 Identification of Parks and Recreation Areas

Jefferson and Walworth counties contain multiple state and local parks and recreation areas:

Jefferson County

- Aztalan State Park
- Glacial Drumlin State Trail
- Jefferson Marsh State Wildlife And Natural Area
- Kanow Park Fishery Area
- Kettle Moraine State Forest
- Koshkonong Wildlife Area
- Lake Mills Hatchery
- Lake Mills Wildlife Area
- Lima Marsh Wildlife Area
- Princes Point Wildlife Area
- Red Cedar Lake Natural Area
- Rome Pond Wildlife Area
- Waterloo State Wildlife Area

Walworth County

- Big Foot Beach State Park
- Honey Creek Wildlife Area
- Ice Age Trail
- Kettle Moraine Conservation Area and State Forest
- Lulu Lake Natural Area
- Turtle Creek Wildlife Area
- Potters Lake Public Access

- White River State Trail

The counties also contain statewide habitat areas, public access areas, statewide wildlife habitat areas, wetland reserve program parcels, and private conservation easements.

7.16.2 Short and Long-term Mitigation

The Project will not be located within a park or recreational area. Though not directly impacted, parks and recreation areas may be indirectly impacted during construction and operation, depending on the locations of the LNG sites and pipelines. Impacts may occur through temporary road closures and temporary increased noise associated with construction. During operations there will be slightly increased traffic and operation noise near the sites. Traffic during operation will primarily include employees entering or exiting the LNG site, as well as occasional maintenance vehicles. Increases in traffic are not anticipated to be significant due to the number of employees required during operation.

The Project will require night lighting for safety and security during construction and operation. Outdoor light fixtures will be shielded and directed downward to minimize light visible to adjacent properties. Impacts from lights will be further mitigated by scheduling the majority of construction activities during daylight hours. During operation, the Project sites will require exterior lighting for safety and security. Lights will be required near structures on the property. Access roads, parking areas, and walkways will be illuminated with lighting fixtures on poles and/or structures. Building entrances will be illuminated with fixtures mounted directly above doors. Outdoor light fixtures will be shielded and directed downward to minimize light visible to adjacent properties. Any floodlights required for the operation of the Project will be directed inward towards the facility and will have top and side shields. Once final LNG Sites are identified, a more detailed analysis of potential lighting impacts will be assessed.

7.17 Airports

The following sections provide information related to airports in the Project area.

7.17.1 Airports in the Project Region

Airports in the Project region include the Watertown Municipal Airport, the Gutzmer's Twin Oaks Airport, the Palmyra Municipal Airport, the Clover Valley Airport, the East Troy Municipal Airport, the Tamarack Airport, several private use airstrips, and multiple heliports.

7.17.2 Airport Descriptions

The Watertown Municipal Airport has two paved runways, one of which is approximately 2,800 feet long and oriented in a northwest-southeast direction, while the other is approximately 4,500 feet long and

oriented in a southwest-northeast direction. The Gutzmer's Twin Oaks Airport has one grass runway approximately 2,500 feet in length and oriented in a north-south direction. The Palmyra Municipal Airport has one grass runway approximately 2,800 feet in length and oriented in an east-west fashion. The Clover Valley Airport has a grass runway approximately 1,500 feet in length and oriented in a north-south direction. The Tamarack Airport is a grass strip of unknown length situated in a northwest-southeast direction.

7.17.3 Potential Impact to Navigable Airspace

Any structure (including permanent structures and temporary construction equipment) on the Project sites that exceeds 200 feet above ground level in height would be considered an obstruction to navigable airspace and could impact aircraft safety unless it is marked and lighted in accordance with criteria set forth by the FAA. The FAA does not study potential impacts to private use airports unless that airport has instrument procedures approved by the FAA.

7.18 Communication Towers

The Utilities will use the Federal Communications Commission (FCC) GIS data to identify communication towers, such as cellphone towers and TV towers, near each LNG Site and potential connecting natural gas pipeline routes once finalized.

7.18.1 Potential Interference with Communication Towers

The Project team will analyze the Project's potential to interfere with communication tower signals after Project sites are identified.

7.18.2 GIS Location Information

The Utilities will use the FCC GIS data to map communication towers near each LNG Site and potential connecting natural gas pipeline routes once finalized.

8.0 NATURAL RESOURCES IN THE NATURAL GAS PIPELINE CONNECTION AREAS

8.1 Forested Lands

Table 8-1 provides the different forest types in Jefferson and Walworth counties.

Table 8-1: Forested Lands in Jefferson, and Walworth Counties

Forest Type	Jefferson County	Walworth County
Aspen forested wetland	718.9	531.1
Aspen/paper birch	12.0	720.8
Bottomland hardwoods	17,351.5	1,568.8
Central hardwoods	20,554.9	20,792.9
Coniferous forested wetland	14,353.4	1,036.0
Fir spruce	0.0	0.0
Hemlock hardwoods	0.0	0.0
Mixed deciduous/coniferous forest	0.0	4.3
Mixed deciduous/coniferous forested wetland	11.1	483.5
Northern hardwood	1,319.9	230.5
Oak	5,087.9	24,443.5
Pine	2,520.6	4,364.4
Red maple	0.0	0.0
Swamp hardwoods	1,728.0	384.7

Source: WDNR Wiscland Dataset

Detailed habitat assessment surveys will be completed once final LNG sites and pipeline routes are identified. These surveys will identify specific forest types located at each site and along each pipeline route. Forested land impacts will be calculated based on these surveys. Managed Forest Law and Crop Law Properties will also be investigated after final LNG sites and pipeline routes are identified and impacts to these properties will be assessed.

8.2 Grasslands

Table 8-2 provides the different grassland types in Jefferson, and Walworth counties.

Table 8-2: Grasslands in Jefferson, and Walworth Counties

Grassland Type	Jefferson County	Walworth County
Cool season grass	921.6	149.1

Grassland Type	Jefferson County	Walworth County
Reed canary grass	145.3	6.2
Warm season grass	13,061.0	5,489.2

Source: WDNR Wiscland Dataset

Detailed habitat assessment surveys will be completed once final LNG sites and pipeline routes are identified. These surveys will identify specific grassland species located at each site and along each pipeline route. Grassland impacts will be calculated based on these surveys.

8.3 Conservation Easements

The LNG Sites and associated pipeline routes are not expected cross any known conservation easements. This will be re-evaluated when file sites and pipeline routes are identified and, if needed, supplemental information will be filed.

8.4 Flood-Sensitive Facilities

Once LNG site alternatives and pipeline routes are identified, WEC will investigate floodplains in the vicinity of each alternative to determine what floodplain impacts, if any, will result due to the Project. The LNG Sites are not anticipated to be placed within the 100-year floodplain.

8.5 Wetlands

A level 1 wetland desktop delineation will be conducted after Project sites and pipeline routes are identified. The wetland delineation will be provided in **Appendix U of Volumes II and III**. The methodology for the desktop delineation will consist of reviewing several baseline datasets including, but not limited to recent high-resolution aerial imagery, USFWS NWI data, WWI data, NRCS SSURGO hydric soils, LiDAR contours, and USGS topographic maps. The findings from this level 1 wetland desktop delineation will be summarized in a report with detailed wetland information and maps. The report will include a WRAM assessment of each wetland. A WRAM assessment evaluates wetland functions and values based on various factors including vegetation quality, public/human use, wildlife habitat, water use/quality, and site degradation. The WRAM assessment results will be provided.

Wisconsin Chapter NR 103.04 defines unique and significant wetlands as “identified in SAMP, SWIS, ADID and areas designated by the U.S. EPA under section 404 (c), 33 USC 1344 (c)”. Wetlands will be assessed to determine if any are eligible for this designation.

Once the wetland assessments above are completed, mitigation measures will be designed to minimize potential impacts to wetlands during construction and operation of the Project.

8.6 Waterbodies/Waterways

The following sections provide information on waterbody and waterway crossings; construction activities below the ordinary high-water mark; need and methods for waterbody and waterway crossings; mitigation methods; and waterbody classifications.

8.6.1 Waterbody and Waterway Crossings

A wetland summary report with detailed waterway information and maps will be prepared for the Project once final LNG Sites alternatives and pipeline routes are identified. This report will include a discussion of waterways identified within each site and/or pipeline route.

8.6.2 Construction Activities Below Ordinary High-Water Mark

A wetland summary report with detailed waterway information and maps will be prepared for the Project once final LNG Sites alternatives and pipeline routes are identified. This report will include a discussion of construction activities that need to occur below the ordinary high-water mark, if applicable. The report will also include a summary of waterways that are proposed to be open-cut during the natural gas line installation process.

8.6.3 Need and Methods for Waterbody and Waterway Crossings

HDD methods have been designed to the extent practical to avoid disturbance to natural resources. If large and wide waterways need to be crossed, these waterways will be accessed from either side where feasible such that crossing is not necessary. However, several areas may only be accessible if temporary waterway crossings are applied due to intersecting railroad easements, steep slopes, and lack of available off-ROW access that would not impact additional natural resources such as wetlands.

8.6.4 Mitigation Methods

HDD methods will be used to the extent practical to avoid waterway impacts if waterway crossings are necessary for the Project. In areas where HDD is not feasible, open-cut trenching will be used to minimize impacts to waterways. Construction equipment will operate above the OHWM of each waterway for trenching. Natural flow within the waterway will be maintained at all times. Excavated material from the trench will be placed on the bank above the OHWM and backfilled as applicable. Backfill cover requirements will be met, pre-construction contours will be restored to the extent practicable, and waterway banks will be stabilized via seeding and/or the installation of erosion control matting or riprap. Excess excavated not needed for backfill will be distributed in relatively flat upland areas in accordance with applicable regulations.

Impacts to water quality will be minimized through the implementation of best management practices (BMPs). The trench will be excavated immediately prior to pipe installation to limit the duration of construction within the waterway to the extent practical.

8.6.5 Waterbody Classifications

The following sections discuss waterways that are considered outstanding or exceptional; trout streams; or wild and scenic rivers.

8.6.5.1 Outstanding or Exceptional Resource Waters

According to the WDNR, the following outstanding or exception resource waters are located in the Project counties:

Jefferson County:

- Allen Creek

Walworth County:

- Bluff Creek
- Little Turtle Creek
- Potawatomi Creek
- Turtle Creek
- Van Slyke Creek

8.6.5.2 Trout Streams

The following trout streams are located within Walworth county:

Walworth County:

- Bluff Creek
- Harris Creek
- Mukwonago River
- Potawatomi Creek
- Spring Brook
- Steel Brook
- Van Slyke Creek

Jefferson County has no trout streams.

8.6.5.3 Wild or Scenic Rivers

No wild or scenic rivers are located in the Project counties.

8.7 Construction Methods through Wetlands and Waterways

Construction methods for the Project through wetlands and near waterways may include open trench, HDD, and span bridge. Potential impacts to wetlands at each location will be calculated once final LNG Sites alternatives and pipeline routes are identified.

8.7.1 Machinery to be Used

Trenching involves excavation of a ditch for pipeline placement and is typically accomplished via a trenching machine or backhoe. Trench spoils will be segregated by topsoil layers, deposited adjacent to each trench side within the construction work areas. The typical width of open trenching through wetlands will be 30 to 36 inches, allowing rooms for construction crews to maneuver the pipe into the trench. The length and widths of open trenching within wetlands will be provided in the WDNR Waterway/Wetland Impact Location Table.

HDD allows for construction across a landscape without the excavation of a trench by drilling a hole significantly below conventional pipeline depth and pulling the pipeline through the pre-drilled hole. Entry and exit points along the pipeline are used to create a point-to-point construction method, with minimal at grade disturbance between the entry and exit points. Machinery used at HDD drill sites may include the rig unit, excavator, frac tanks, a drill pipe, water pump, power generates, and cuttings separation equipment and containment. Lengths and impacts related to HDD locations, if necessary, will be provided in the WDNR Waterway/Wetland Impact Location Table.

8.8 Rare Species and Natural Communities

After Project sites and pipeline routes are identified, a habitat assessment survey will be completed and an Environmental Reviewer will complete an ER Review which will indicate protected plant and animal species near the Project alternatives. The WDNR will provide follow-up actions and guidelines for construction in areas near protected species which will need to be taken to comply with state and/or federal protected species laws.

8.9 Invasive Species (Uplands and Wetlands)

Once final LNG Site alternatives and pipeline routes are selected, an invasive species survey will be conducted at each site and pipeline route to identify any invasive plant species. If invasive species are identified, WEC will mitigate the potential spread of the species in compliance with Chapter NR 40

Invasive Species Identification, Classification and Control Rule. During construction, WEC will include invasive species on construction plans and flag invasive species onsite. Construction equipment will be cleaned when moving from an invasive species area to a non-infested area.

In accordance with Chapter DATCP 20, WAC, seed mixtures that contain potentially invasive species or species that may be harmful to native plant communities will be avoided during revegetation activities. Seed mixtures will meet the minimum requirements in the Rules for Testing Seed, published by the Association of Official Seed Analysts.

8.10 Historical Resources

Once final LNG Site alternatives and pipeline routes are selected, the PLSS locations of the LNG Site alternatives will be identified and a historical resources report will be prepared based on cultural resource surveys. potential effect on historical resources.

8.11 Restoration of Disturbed Areas

All temporary construction facilities will be dismantled after construction is complete. Temporary work areas will be restored to pre-construction conditions where appropriate. The pipeline ROW will be revegetated with seed mixtures that will meet the minimum requirements in the Rules for Testing Seed, published by the Association of Official Seed Analysts.